City of Woodstock
COMMUNITY RISK ASSESSMENT

Final Report
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Presented to:

City of Woodstock

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PREFACE

This Community Risk Assessment will serve as a foundational document to inform and direct the development of a municipal Fire Master Plan for the City of Woodstock to address the strengths, threats and vulnerabilities that are unique to the city, to protect lives, the environment and property.

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ACRONYMS

Acronym	Definition
CEMP	Community Emergency Management Program
CO	Carbon Monoxide
CRA	Community Risk Assessment
FD	Fire Department
FPPA	Fire Protection and Prevention Act
FSMP	Fire Service Master Plan
GTA	Greater Toronto Area
HIRA	Hazard Identification and Risk Assessment
MPAC	Municipal Property Assessment Corporation
MVC	Motor Vehicle Collision
MW	Megawatt
NBC	National Building Code
NFPA	National Fire Protection Association
OBC	Ontario Building Code
OFC	Ontario Fire Code
OFM	Office of the Fire Marshal
WFD	Woodstock Fire Services

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EXECUTIVE SUMMARY

Introduction

A Community Risk Assessment (CRA) is a process used to identify, evaluate, and prioritize potential hazards, vulnerabilities, and risks to the public within a specific community or geographic area. Under the Fire Protection and Prevention Act, 1997 (FPPA), **Ontario Regulation 378/18**: **Community Risk Assessments (O. Reg. 378/18)**, every municipality must complete and review a CRA "to inform decisions about the provisions of fire protection services[1]"in the interest of public safety. It involves gathering information, analyzing data, and engaging with stakeholders to understand the potential threats and vulnerabilities that could lead to various types of emergencies or disasters. The goal of a CRA is to inform emergency management and response agencies to enhance community resiliency and reduce the impact of potential future emergencies.

Community Risk Assessment Process

The Office of the Fire Marshal (OFM) has developed a guideline (OFM-TG-02-2019) to assist municipalities during the process of conducting a CRA. As per O.Reg. 378/18, there are nine mandatory profiles that must be examined:

1. **Geographic Profile:** Physical features of the community
2. **Building Stock Profile:** Types, numbers, uses and ages of buildings in the community
3. **Critical Infrastructure Profile**: Facilities and services that meet vital needs, sustain economy, and protect public security
4. **Demographic Profile:** Composition of the community's population
5. **Public Safety and Response Profile:** Organized agencies and organizations within and external to the community that can respond to certain types of incidents
6. **Community Services Profile:** Community agencies, organizations and associations that can provide supportive services
7. **Hazard Profile:** Natural, human-caused, and technological hazards in the community
8. **Economic Profile:** Economic sectors that are critical to financial stability of the community
9. **Past Loss and Event History Profile:** Past emergency responses in the community

[1] *Ontario Regulation 378/18: Community Risk Assessments, Mandatory Use, Section 1 (b)*

Each profile is considered and, where applicable, taken through the core five-step process of a CRA development as outlined in the table below.

Table 1: Five-step process of a CRA

No.	Step	Description
1	Data Collection	Gather relevant data about the community, including demographics, geography, infrastructure, land use, historical disaster data, socio-economic factors, and stakeholder input.
2	Hazard Identification	Identify the various hazards that could affect the community. Hazards include natural, human-made and technological events.
3	Vulnerability Analysis	Assess the community's vulnerabilities in relation to each identified hazard. Consider factors such as population density, housing quality, socio-economic status, access to community resources and community protection agencies.
4	Risk Assessment	Combine information about hazards and vulnerabilities to assess the overall risk to the community by quantifying the likelihood and potential impact of various hazards occurring and affecting vulnerable areas.
5	Risk Ranking and Risk Treatment	Assign each risk a ranking score and potential treatment options to accept, avoid, mitigate, or transfer the risk.

The results of the five-step process will provide a series of identified risks and key findings. Identified risks are factors which may highlight a need for future consideration during the development of a Fire Master Plan (FMP) when examining emergency service levels, while key findings may be noted as strengths in the community's current response model and/or trends to be monitored.

The identified risks and key findings of the City of Woodstock's CRA are summarized in the next section and a full analysis of the risk assessment process is outlined in Section 11 of this report.

Summary of Identified Risks and Key Findings

The following identified risks and key findings are drawn from analyses presented throughout the report. They are grouped based on the nine mandatory profiles and in the order in which they appear in the report.

As per the OFM technical guidelines, the risk treatments presented in this report are a generalized basis for further consideration and in-depth analysis during the development of a FMP, which will serve to account for feasibility of risk treatments, cost, and execution.

Table 2: Summary of Identified Risks

Identified Risk	Probability Level	Risk Level	Rationale
The road network, particularly highways 401 and 403 which crosses the southern portion of the city contributes to emergency call volume due to motor vehicle collisions and vehicle fires.	Almost Certain	Moderate	• Approximately 1430 emergency calls responded to between 2018 and 2023 pertain to motor-vehicle related incidents, this represents 89.00% of rescue calls and approximately 17.18% of all calls responded to by WFD during that period. • 3.64% required extrication
Since provincial highways and rail lines are designated dangerous goods routes, traffic carrying various hazardous materials regularly passes through the City. Both are major transportation corridors used to transport goods across the county and across borders into the U.S.	Possible	Moderate	• Provincial Highways 401and 403 intersect in Woodstock. Hwy 401 bisects the city in an east-west direction. Highways 401 and 403 crosses the southern portion of the city. • Both are major transportation corridors used to transport goods across the county and across borders into the U.S. Incidents involving roads and highways, as well as incidents involving dangerous goods, were listed as a moderate threat on the city's 2022 Hazard Identification and Risk Assessment • Dangerous goods are frequently transported along these routes, which pass through populated areas.

Identified Risk	Probability Level	Risk Level	Rationale
Large areas of agricultural land and green spaces throughout the city face an increased risk of grass, field, and wooded area fires, particularly during droughts and dry conditions typically experienced in the summer months.	Possible	Moderate	• The City of Woodstock has agricultural lands and some forestry features which present an element of risk related to wildland and grassfires. • In January 2018, the City of Woodstock (the City), acquired lands from the neighbouring Township of Norwich with the intention of expanding the settlement boundary to accommodate future industrial and commercial development. These lands included 607 hectares of land in two separate areas located at the southeast and southwest corners of the City's municipal boundary. They currently accommodate uses such as rural land, crops, farm related residential, livestock, industrial, commercial and utilities.

Identified Risk	Probability Level	Risk Level	Rationale
Group C residential occupancies represent 94.79% of the city's existing occupancies. Standard Incident Reporting (SIR) from the OFM indicates 71.68% of structure fire loss and 100% of the fatalities over the five-year period from January 1, 2019, to December 31, 2023, occurred within Group C - Residential Occupancies.	Almost Certain	High	• The majority of the city's existing property stock is comprised of Group C - Residential Occupancies (94.79%) • 71.68% of structure fires loss over the five-year period from January 1, 2019, to December 31, 2023, occurred within Group C - Residential Occupancies. • 100.00% of the civilian fire related fatalities occurred in Group C Occupancies. • Over a five-year period from January 1st, 2019, to December 31st, 2023, in Group C - Residential occupancies, the City of Woodstock reported that in 39.29% of fires responded to, there was no smoke alarm present, or a smoke alarm was present and did not operate. This is higher than the provincial average of 29.57%. • In the City 34.52% of incidents smoke alarms were present and successfully operated, which is 10.00% lower than the provincial rate of 44.52%.
Information from MPAC data indicates that approximately 45.54% (8215 properties) of the city's building stock was constructed before 1981, prior to the adoption of the 1981 Ontario Fire Code (OFC).	Almost Certain	High	• 7,313 (40.54%) dwellings were built prior to 1975 and the adoption of the Ontario Building code and the requirement to meet safe building standards. • 45.54% of the city's building stock was built before 1981, preceding the adoption of the 1981 OFC

Identified Risk	Probability Level	Risk Level	Rationale
19 properties in Woodstock have been identified as having a potentially high fuel load, leading to an increased fire risk	Likely	High	• There are 372 industrial occupancies (2.26% of property stock) - several with known high fuel load concerns • There have been 15 industrial fires over the past 5 years (13.27% of all fires) resulting in over $750k fire loss
The City of Woodstock has 10 occupancies with a footprint of more than 100,000 sq ft.	Possible	Moderate	• There are 372 industrial occupancies (2.26% of property stock) - several with known high fuel load concerns • There have been 14 industrial fires over the past 5 years (11.29% of all fires) resulting in over $750k fire loss
The percentage of the population aged 65 years and older in Woodstock represents 19.57% of the total population, which is higher than the province's rate of 18.55%. Additionally, 13.31% of the city's population falls between the ages of 55 and 64, gradually aging into the senior demographic of 65 years and older.	Almost Certain	High	• Canada's aging population has been recognized as one of the most significant demographic trends. • Seniors (those 65 years and over) are considered to represent one of the highest fire risk groups across the province based on residential fire death rate (fire deaths per million of population). • There are 8 long-term care/retirement homes
Industrial occupancies, represent 11.29% of structure fires and 8.92% of total structure fire loss during this period, with a 3.99% higher incident rate than the province for this occupancy type.	Likely	High	• Group F industrial accounts for only 2.26% of the property stock but 11.29 % of the structure fires. • The City of Woodstock had a 3.99% higher incidence of industrial fires than the province. • There are 372 industrial occupancies (2.26% of property stock) - several with known high fuel load concerns • There have been 14 industrial fires over the past 5 years (resulting in over $750k fire loss)

Identified Risk	Probability Level	Risk Level	Rationale
67.74% (84) fires occurred in Group C-Residential Occupancies, contributing to 71.68% of the total fire loss	Almost Certain	High	• City of Woodstock reported that in 39.29% of fires responded to, there was no smoke alarm present, or a smoke alarm was present and did not operate. This is higher than the provincial average of 29.57%. • (37 fires) representing 28.94% of all fire causes was smoking related materials. This is more than double the provincial average at 13.73% • 34.52% of incidents smoke alarms were present and successfully operated, which is 10.00% lower than the provincial rate of 44.52%.
Open flame tools/ smoker's articles represent the highest number of reported ignition source (37 fires) representing 29.84 % of all fire causes. This is more than double the provincial average (13.73%).	Likely	Moderate	• The majority of the city's existing property stock is comprised of Group C - Residential Occupancies (94.79%) • 71.68% of structure fires loss over the five-year period from January 1, 2019, to December 31, 2023, occurred within Group C - Residential Occupancies. • 100.00% of the civilian fire related fatalities occurred in Group C Occupancies.
Over a five-year period from January 1st, 2019, to December 31st, 2023, in Group C - Residential occupancies, the City of Woodstock reported that in 39.29% of fires responded to, there was no smoke alarm present, or a smoke alarm was present and did not operate. This is higher than the provincial average of 29.57%.	Likely	Moderate	• The majority of the city's existing property stock is comprised of Group C - Residential Occupancies (94.79%) • 71.68% of structure fires loss over the five-year period from January 1, 2019, to December 31, 2023, occurred within Group C - Residential Occupancies. • 100.00% of the civilian fire related fatalities occurred in Group C Occupancies.

Identified Risk	Probability Level	Risk Level	Rationale
In the City 34.52% of incidents smoke alarms were present and successfully operated, which is 10.00% lower than the provincial rate of 44.52%.	Likely	Moderate	• The majority of the city's existing property stock is comprised of Group C - Residential Occupancies (94.79%) • 71.68% of structure fires loss over the five-year period from January 1, 2019, to December 31, 2023, occurred within Group C - Residential Occupancies. • 100.00% of the civilian fire related fatalities occurred in Group C Occupancies.

Table 3: Summary of Key Findings

No.	Key Finding
Geographic Profile	
1	There are two bridges that cross the Thames River. As both fire stations are located on the South side, any incident impacting the bridges would limit access to communities north of the bridge.
2	Waterfront activities heighten the risk of incidents both on the water and along the shorelines. WFD reported a total of 2 water and 2 ice rescues between January 2018 and December 2022.
3	Grade-level rail crossings may function as physical barriers within the city's road network, potentially leading to delays in emergency response times.
Building Stock Profile	
4	The City of Woodstock currently has 19 occupancies that have been identified as a potential vulnerable occupancy.
5	The City has identified 32 heritage properties. These historic areas can present a high fire risk due to the age of the buildings, the materials used in their construction, and their exposure to other risks.
Critical Infrastructure	
6	Approximately 1430 emergency calls responded to between 2018 and 2023 pertain to motor-vehicle related incidents, this represents 88.81% of rescue calls and approximately 17.10% of all calls responded to by WFD during that period.
7	The most pertinent risk arising from these utilities relates to fallen hydro lines. Between 2018 and 2023 WFD responded to 62 calls for fallen hydro lines which is 14.86% of all public hazard calls.
Demographic Profile	
8	29.35% of Woodstock residents commute to other locations within the same province, a higher proportion than Ontario's rate of 23.50%
9	The youngest demographic, comprising individuals aged 14 years and under, accounts for 17.63% of the city's total population, which is higher than the province's average of 15.83%.

No.	Key Finding
Hazard Profile	
10	The City's 2022 Hazard Identification and Risk Assessment (HIRA) highlights 10 hazards that could impact the delivery of fire protection services. They include Tornado, Infectious Disease, Road & Highway Incidents, Cyber Attack, Sabotage, Oil or Natural Gas, Chemical, Electrical Energy, Extreme Heat and Fire Explosion.
Economic Profile	
11	There are 15 major employers identified that significantly contribute to the economic vitality of the community
Past Loss & Event History Profile	
12	The City of Woodstock had a 4.69 higher rate of fires in Group A assembly occupancies and an 6.94% higher fire loss than that of the province.
13	The city reported 13 arson fires (3.83% higher than the Province) and 7 fires related directly to vandalism (4.06% higher than the province)
14	Incidents in the city where the ignition source was "other electrical/mechanical" is 4.95% higher than that of the province.
15	Vehicle Collisions are 88.81% of all rescue incidents

SECTION 1
INTRODUCTION

1.1 Background

This Community Risk Assessment (CRA) has been developed for the City of Woodstock to comply with **Ontario Regulation 378/18: Community Risk Assessments (O. Reg. 378/18)**. O. Reg. 378/18 was made under the authority of the Fire Protection and Prevention Act, 1997 (FPPA) and came into effect on July 1, 2019.

It requires all municipalities in Ontario to develop a CRA prior to July 1st, 2024. This regulation also requires municipalities to **"use its community risk assessment to inform decisions about the provisions of fire protection services"[2].** At this time, this CRA will inform the Fire Master Plan being developed as a companion document for the City of Woodstock. This CRA is formatted to become a stand-alone document in the future to assist the municipality in sustaining compliance with O. Reg. 378/18 that includes conducting a review of the CRA when necessary, and annually.

In addition to this CRA, the FPPA requires that municipalities must provide fire protection programs that "**must include public education with respect to fire safety and certain components of fire prevention and provide such other fire protection services as it determines may be necessary in accordance with its needs and circumstances"[3]**. The recent introduction of O. Reg. 378/18 is now a core component of developing an in-depth analysis of a community's fire related risks through a comprehensive analysis of nine mandatory profiles.

The FPPA also assigns duties to the Office of the Fire Marshal (OFM) to **"advise municipalities in the interpretation and enforcement of this Act and the regulations"[4]**. The OFM has developed Technical Guideline-02-2019 (TG-02-2019) to assist municipalities and fire departments in the process to develop a CRA and to utilize the completed CRA to inform the municipality's decisions about complying with the FPPA.

[2] *Ontario Regulation 378/18, Community Risk Assessments, Mandatory Use, Section 1(b)*

[3] *Fire Protection and Prevention Act, 1997 Part II Responsibility for Fire Protection Services, Section 2.1 (a) (b)*

[4] *Fire Protection and Prevention Act, 1997, Part III Fire Marshal, Section 9.2 (b)*

At a minimum, the regulation outlines a standard set of information profiles that must be considered when conducting a community risk assessment. The Guideline provides suggestions as to how to record and analyze the data/information and provides sample worksheets to assist municipalities. A leading practice in Ontario would see the City of Woodstock's Community Risk Assessment report maintained as a living document by the Woodstock Fire Services. This would include regular (e.g. annual) review and updates to the CRA's data and information.

The methodology and analysis utilized to develop this CRA has been directly informed by TG-02-2019 that recognizes the value of understanding the fire risk within a community, and the importance of developing fire risk reduction and mitigation strategies in addition to providing fire suppression services.

1.2 Purpose

The primary purpose of this CRA is twofold:

1. To develop a Community Risk Assessment for the City of Woodstock to identify the fire related risks within the community and comply with O. Reg. 378/18; and
2. To utilize the risk conclusions of the Community Risk Assessment to inform a comprehensive analysis of the existing, and future fire protection needs of the City of Woodstock.

1.3 Methodology

In addition to TG-02-2019, the methodology applied to develop this CRA has been informed by other current industry standards and best practices. These include:

1. OFM Comprehensive Fire Safety Effectiveness Model: Fire Risk Sub-Model
2. OFM Public Fire Safety Guideline (PFSG) 04-40A-03: Simplified Risk Assessment
3. NFPA 1300, Standard on Community Risk Assessment and Community Risk Reduction Plan Development (2020 Edition)
4. NFPA 1730, Standard on Organization and Deployment of Fire Prevention Inspection and Code Enforcement, Plan Review, Investigation, and Public Education Operations (2019 Edition)
5. Vision 20/20 Community Risk Assessment: A Guide for Conducting a Community Risk Assessment (Version 1.5, 2016)
6. Vision 20/20 Community Risk Reduction Planning: A Guide for Developing a Community Risk Reduction Plan

As required by O. Reg. 378/18, this CRA includes a comprehensive analysis of the nine mandatory profiles including:

i. Geographic Profile
ii. Building Stock Profile
iii. Critical Infrastructure Profile
iv. Demographic Profile
v. Public Safety and Response Profile
vi. Community Services Profile
vii. Hazard Profile
viii. Economic Profile
ix. Past Loss and Event History Profile

Within each of the nine profiles, there are several sub-topics examined. These sub-topics are illustrated in Figure 1. These profiles are based on an analysis of several sources of information, including data provided by the City of Woodstock, Woodstock Fire Department (WFD), Statistics Canada, the OFM, and desktop research.

The mandatory profile analyses result in a series of risk related conclusions that will be used to inform service levels or other strategies in alignment with the three lines of defense through a risk treatment process. These are referred to as a '**key finding**' or an '**identified risk**.' Those findings referred to as an 'Identified Risk' are taken through a risk assignment process to assist with risk prioritization as referred to within TG-02- 2019. In specific circumstances, being those that involve additional jurisdictional or legislative considerations, a risk-related conclusion is referred to as a Special Consideration. All risk-related conclusions will be taken through a risk treatment process and aligned with the three lines of defense to inform decision making. Figure 2 illustrates the risk treatment process.

Identified Risks: These are hazards or risks that **currently** exist within a community and could potentially be worsened in the event of an emergency, leading to a detrimental impact on the community, the Fire Department or both. Risks may arise from specific hazards identified in individual profiles or from compounded risks that span multiple profiles. The risk level is determined by evaluating the probability and potential consequences of each risk, which in turn guides how the Fire Department resources are allocated.

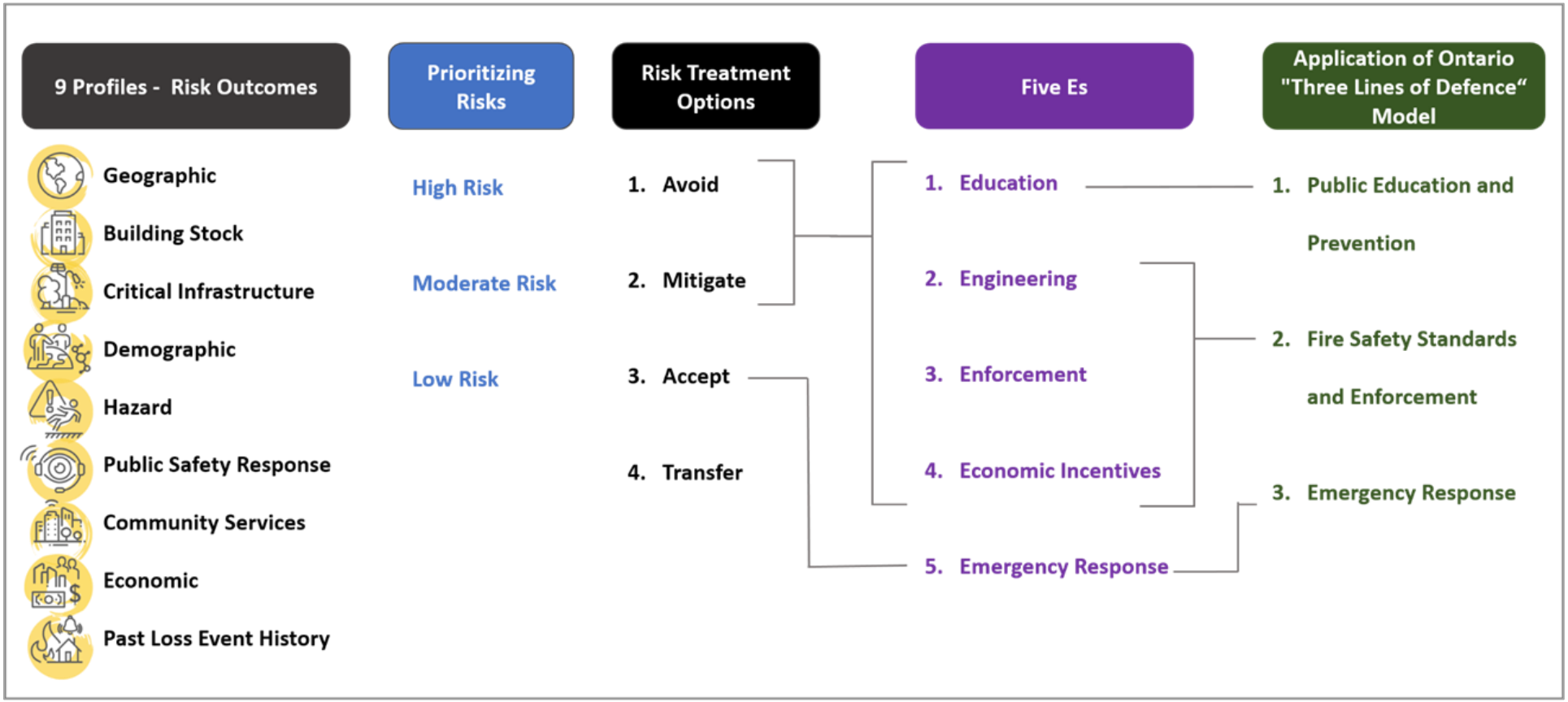
Key Findings: These are future trends or developments that should be closely monitored. While these concerns may not currently qualify as identified risks requiring immediate action, they are significant enough to be flagged, monitored, and reviewed as part of the annual CRA update.

Figure 1: Community Risk Assessment Profiles and Sub-topics

COMMUNITY RISK ASSESSMENT PROFILES AND SUB-TOPICS

Geographic	Building Stock	Critical Infrastructure	Demographics	Hazards	Public Safety Response	Community Services	Economic	Past Loss & Event History
• Road network • Bridges • Railways • Airport • Natural features and landforms • Wildland Urban Interface	• Property stock by occupancy type • Building age, construction • Building density and exposure • Building height and area • Potential high fire risk occupancies • Historically or culturally important features	• Food and water • Oil and natural gas • Electricity • Telecommunications • Public safety and security • Continuity of government • Transportation • Health • Financial institutions	• Population and dispersion • Age • Gender • Socioeconomic circumstances • Ethnic and cultural considerations • Transient populations	• Hazard Identification and Risk Assessment (HIRA)	• Public safety response agencies within the community	• Community service agencies, organizations, and associations	• Major employers and economic sectors	• Overall fire loss • Fire loss by occupancy type • Civilian fire deaths and injuries • Fire cause and ignition • Smoke alarm status • Call volume • Call types

Figure 2: Risk Treatment Process



The analysis presented within this CRA has been informed by a wide range of data sources. Where applicable, all numerical data has been rounded to the nearest 1/100 (hundredth) decimal point to provide consistency in the analysis. As a result, the numerical totals presented within each analysis, although stated as reflecting 100%, may show a minor variance based on the use of only the nearest 1/100 (hundredth) decimal points.

SECTION 2
GEOGRAPHIC PROFILE

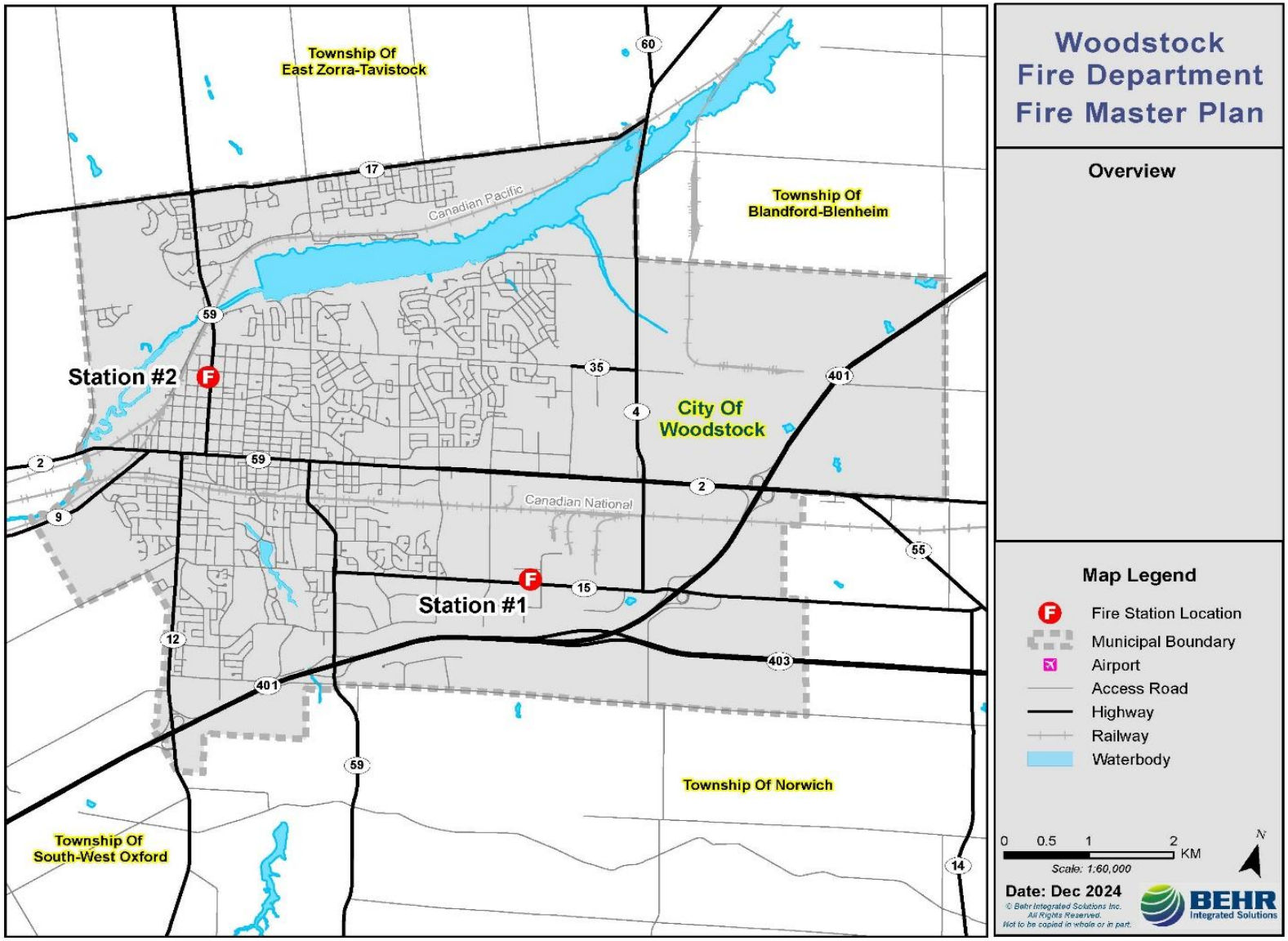
The geographic profile of a community is an assessment of the physical features of a community, such as highways, waterways, railways, bridges, landforms, quarries, and wildland-urban interfaces, that may present inherent risks to the community and affect emergency services' access to incidents and response capabilities. This section contains a detailed analysis of these geographical features for the City of Woodstock to assist in determining the type and level of fire protection services needed for the community and any potential impacts these features may pose on service delivery.

2.1 Geographic Overview

Nestled along the 401 Highway corridor in Ontario, the City of Woodstock is a municipal district located within Oxford County in Southwestern Ontario. It has a population of approximately 50,450 residents spread across 55.7 km^2, resulting in a population density of 905.74/km^2. The city strategically accesses major markets through an extensive transportation network, featuring high-capacity roads, and rail systems. Positioned east of London and west of Kitchener, Woodstock has direct access to major highways such as the 401 and 403.

Surrounded by the four townships of East Zorra-Tavistock, Blandford-Blenheim, South-West Oxford, and Norwich, Woodstock is an urban hub providing the essential amenities to the neighbouring townships. Woodstock has experienced steady growth, providing a solid blend of amenities, attractive housing, a state-of-the-art regional health facility and is ideally centrally located. Post-secondary opportunities in the community helps broaden the city's appeal to families and business.

Map 1: City of Woodstock Overview Map



2.2 Transportation Network

2.2.1 Road Network

Road networks and transportation systems provide fire services with access throughout a community when responding to emergency calls. The road network is how fire apparatus travel through a municipality; therefore, it is valuable to consider areas where there may be a lack of connectivity due to road network design, as well as other natural barriers (e.g. rivers, lakes, etc.) or human-made barriers (e.g. rail lines, traffic calming measures, etc.). Road networks can also contribute to vehicle congestion, causing delays in emergency response travel times. Where possible, the city's transportation planning processes should include WFD as a stakeholder to provide consideration for emergency services' needs and challenges relating to the road network, traffic congestion, and traffic calming and related topics.

Roads are also important from a risk and emergency response perspective because motor vehicle-related incidents are often a common source of emergency call volume within a municipality.

The city is responsible for several arterial, collector, local, roads, totaling 217 km. According to the city's Asset Management Plan, road conditions are rated as 68% in fair or better condition, while 33% are in poor or very poor condition good, with an average condition of 70%. The city takes a lifecycle management approach to road maintenance and improvements and employs strategic rehabilitation as needed rather than wait for roads to deteriorate to the point of requiring replacement. According to the asset management plan, it is estimated that approximately $10.8 million is required annually to maintain city roads, however funding annually is only $5.7 million creating a $5.1 million gap annually.

As all provincial highways are dangerous goods routes, traffic carrying a variety of dangerous goods is likely to pass through the city daily. Provincial Highways 401and 403 intersect in Woodstock. Hwy 401 bisects the city in an east-west direction. Highways 401 and 403 crosses the southern portion of the city.

Although unlikely, an incident involving a dangerous goods release is possible along these highways. Both are major transportation corridors used to transport goods across the county and across borders into the U.S. Incidents involving roads and highways, as well as incidents involving dangerous goods, were listed as a moderate threat on the city's 2022 Hazard Identification and Risk Assessment.

2.2.2 Bridges and Culverts

Bridges must be considered when conducting a CRA, as they can create physical barriers to emergency responses and negatively impact response times. An apparatus may face restrictions from crossing, such as load limitations, or roadway connectivity may be disrupted if a bridge is out of service for maintenance or repairs. Incidents occurring on a bridge pose increased risks, including spills, congestion, and difficulty accessing the scene. Such incidents may also necessitate specialized skills and equipment for slope rope rescue operations.

The city's Asset Management Plan indicates that there are 13 bridges (not including pedestrian bridges) and 7 culverts. The bridges are rated to be 5% very good, 90% good and 5% fair condition, while the culvert system is rated as 89% good and 11 % poor condition. The WFD has identified 14 bridges within the city boundaries or crossing city boundaries listed in Table 4.

There are two bridges that cross the Thames River. As both fire stations are located on the South side, any incident impacting the bridges would limit access to communities north of the bridge.

Table 4: Bridges

No.	Bridge
1	Const. Jack Ross Memorial Bridge on Norwich Avenue over Highway 401
2	Highway 401 Bridge over Mill Street
3	Parkinson Road Bridge over Highway 401
4	Highway 401 Bridge over Dundas Street (Hwy 2)
5	Middletown Line over Highway 403
6	Vansittart Avenue Bridge over River Thames and Railway tracks
7	Wellington Street South Bridge over Railway tracks
8	Oxford Road 4 Bridge over Pittock Lake
9	Parkinson Road Bridge at Southside Park over Cedar Creek
10	Springbank Avenue Bridge over Railway tracks
11	Railway Bridge over Dundas Street, west end
12	Railway Bridge over Mill Street near Park Row
13	Railway Bridge over Butler Street
14	Railway Bridge over Oxford Road 4

2.2.3 Rail

At-grade rail crossings (an intersection at which a road crosses a rail line at the same level) can create delays in emergency response by impeding access to roadways. They can also pose a threat of dangerous collisions with motor vehicles. Additionally, the physical barriers created by rail infrastructure itself, such as rail yards or the placement of rail infrastructure (e.g., tracks, grade separations, grade level crossings, etc.) within and throughout a city, can impact emergency service travel times and overall emergency response times.

In addition to the rail infrastructure, the frequency at which trains pass through a community and the goods they carry pose varying degrees of risk due to derailment and potentially dangerous goods releases.

The Canadian Pacific Railway (CP) traverse the city east/west north of the Thames River and Pittock Lake. Toyota Manufacturing Plant (TMMC) is also serviced with railway trucks off of C.P. Railroad. The second Railroad is operated by VIA Rail Canada and C.N. Rail, and it runs through the center of the city, south of Dundas Street.

While the possibility of a derailment and release of dangerous goods is low, such an event could have a significant impact and would necessitate a specialized response. Dangerous goods are frequently transported along these routes, which pass through populated areas. Table 5 identifies 7 railway grade-level crossings.

Table 5: Railway Crossings

	Crossing
1	Ingersoll Avenue at Winniett Street and Tecumseh Street
2	Ingersoll Road near Park Row
3	Dundas Street near Bain Street
4	Oxford Street at Tecumseh Street
5	Wilson Street near Henry Street
6	Beards Lane
7	Oxford Road 4 near Oxford Road 17

Table Source: Woodstock Fire Department Community Risk Assessment, June 2024

Effective information sharing practices between railway operators and emergency responders can provide valuable insight into the types and frequencies of dangerous goods being shipped through the city.

2.3 Waterways and Marinas

Waterways pose natural hazards such as potential flooding, ice jams, and erosion, which can trigger the need for rapid evacuation and/or rescue responses. Additionally, waterways frequently used for recreational activities demand that responders have specialized technical rescue training and equipment.

The primary waterway in Woodstock is the Thames River which runs into an artificial lake at the Pittock Reservoir situated on the north side of the city. The Pittock dam is located at the northwest boundary of the city. The dam can only be crossed on foot, and it is closed for vehicle access.

There are several smaller bodies of water or ponds located throughout the city. A second small waterway is the Cedar Creek which is situated to the west of the city and runs south to north. The creek also forms a small artificial lake controlled by a small dam situated inside Southside Park just north of Parkinson Road.

The third largest body of water are the Brick Pond Wetlands located on the west and east sides of Springbank Avenue just south of Dundas Street. Water activities increase the risk of incidents both on the water and onshore. From January 2019 to December 2023, WFD reported a total of 4 water and/or ice rescues.

2.4 Agricultural and Bush Lands

The City of Woodstock has agricultural lands and some forestry features which present an element of risk related to wildland and grass fires. Past boundary adjustments to the city, added more agricultural lands which has increased the fire department's response area considerably. In January 2018, the City of Woodstock (the City), acquired lands from the neighbouring Township of Norwich with the intention of expanding the settlement boundary to accommodate future industrial and commercial development. These lands included 607 hectares of land in two separate areas located at the southeast and southwest corners of the City's municipal boundary. They currently accommodate uses such as rural land, crops, farm related residential, livestock, industrial, commercial and utilities. [5]The inherit risk with handling farmland and wildland fires, Woodstock Fire Department's training of personnel in those areas should be re-evaluated and continuous examination of Mutal Aid Agreements with surrounding municipalities.

[5] *Southeast Woodstock Natural Heritage Report, AECOM Canada, Prepared for the City of Woodstock, 2019*

2.5 Geographic Profile – Identified Risks and Key Findings

Table 6: Geographic Profile - Identified Risks and Key Findings

	Rationale
Identified Risk	
Identified Risk	The road network, particularly highways 401 and 403 which crosses the southern portion of the city contributes to emergency call volume due to motor vehicle collisions and vehicle fires.
Identified Risk	Since provincial highways and rail lines are designated dangerous goods routes, traffic carrying various hazardous materials regularly passes through the City. Both are major transportation corridors used to transport goods across the county and across borders into the U.S.
Identified Risk	Large areas of agricultural land and green spaces throughout the city face an increased risk of grass, field, and wooded area fires, particularly during droughts and dry conditions typically experienced in the summer months.
Key Finding	
Key Finding	There are two bridges that cross the Thames River. As both fire stations are located on the South side, any incident impacting the bridges would limit access to communities north of the bridge.
Key Finding	Waterfront activities heighten the risk of incidents both on the water and along the shorelines. WFD reported a total of 2 water and 2 ice rescues between January 2018 and December 2023.
Key Finding	Grade-level rail crossings may function as physical barriers within the city's road network, potentially leading to delays in emergency response times.

SECTION 3
BUILDING STOCK PROFILE

As referenced in O. Reg. 378/18, the building stock profile assessment involves analyzing the types and uses of buildings within the city. Important considerations include the number, types, and uses of buildings, as well as any building-related risks known to the fire service. Various types or uses of buildings may pose potential fire risks, depending on the presence or absence of fire safety systems and equipment at the time of construction and maintenance thereafter. This section examines these building characteristics within the city.

3.1 Ontario Building Code Occupancy Classifications

OFM TG-02-2019 encourages fire services to assess potential fire-related risks associated with various building occupancy types and uses. This involves considering each occupancy classification's prevalence within a community and the presence of fire and life safety systems and equipment. The Ontario Building Code (OBC) categorizes buildings by major occupancy classification, providing a recognized definition and baseline for developing a community risk assessment.

The OBC is structured into six major building occupancy classifications (groups), further defined by division within each group. Table 7 presents the OBC major classification groups and divisions.

Table 7: OBC Major Occupancy Classifications

Group	Division	Description of Major Occupancies
A	1	Assembly occupancies intended for the production and viewing of the performing arts
A	2	Assembly occupancies not elsewhere classified in Group A
A	3	Assembly occupancies of the arena type
A	4	Assembly occupancies in which occupants are gathered in the open air
B	1	Detention occupancies
B	2	Care and treatment occupancies
B	3	Care occupancies
C	All divisions	Residential occupancies
D	All divisions	Business and personal services occupancies
E	All divisions	Mercantile occupancies
F	1	High-hazard industrial occupancies
F	2	Medium-hazard industrial occupancies
F	3	Low-hazard industrial occupancies

Table Source: Ontario Building Code[6]

3.2 OFM Fire Risk Model Occupancy Classification

The Fire Risk Sub-model developed by the OFM utilizes major group classifications (i.e., Group A, B, C, D, E, F) from the Ontario Building Code (OBC) but does not incorporate the detailed division classifications included in the OBC. This approach allows for comparative assessment of buildings within a community by major occupancy groups, providing a consistent and recognized definition for each major occupancy type. Additionally, it offers the opportunity for further analysis of specific occupancy groups.

Subject to any site-specific hazards or concerns, occupancies within a group can be individually assessed and included within the broader scope of the Community Risk Assessment (CRA). The OFM Fire Risk Sub-Model OBC classifications, definitions, associated fire-related risks, and potential proactive measures to reduce risk within these occupancy types are presented in Table 8.

[6] *(Ontario Ministry of Municipal Affairs and Housing, 2017)*

Table 8: OFM Fire Risk Sub-Model Major Building Classifications

OBC Occupancy Classification	OFM Fire Risk Sub-Model Major Building Classifications	OFM Definitions	OFM Fire Related Risks	Proactive Measures for Reducing Risk
Group A	Assembly Occupancies	An assembly occupancy is defined as one that is used by a gathering of persons for civic, political, travel, religious, social, educational, recreational or like purposes or for the consumption of food or drink.	Assembly buildings are often occupied by a large number of people and may contain high quantities of combustible furnishings and decorations. Occupants are generally unfamiliar with the building's exit locations and may not know how to react in the event of an emergency. Low light conditions are inherent to some of these occupancies and can contribute to occupant confusion during an evacuation. Numerous examples exist of disastrous events that have occurred throughout the world, resulting in multiple fire fatalities in these occupancies. Therefore, these facilities warrant special attention. Accordingly, it is paramount to ensure that maximum occupant load limits are not exceeded, detection is available, an approved fire safety plan is in place and adequate unobstructed exits/means of egress are readily available.	• Regular fire prevention inspection cycles • Automatic fire detection and monitoring systems • Approved fire safety plan and staff training • Pre-planning by fire suppression staff

OBC Occupancy Classification	OFM Fire Risk Sub-Model Major Building Classifications	OFM Definitions	OFM Fire Related Risks	Proactive Measures for Reducing Risk
Group B	Care or Detention Occupancies	A care or detention occupancy means the occupancy or use of a building or part thereof by persons who: • Are dependent on others to release security devices to permit egress. • Receive special care and treatment; or, • Receive supervisory care.	In addition to the presence of vulnerable occupants, these occupancies may contain quantities of various flammable/combustible liquids and gases, oxidizers and combustible furnishings that will impact the intensity of the fire if one should occur. The evacuation or relocation of patients, residents, or inmates to an area of refuge during an emergency poses additional challenges in these facilities. It is essential to ensure that properly trained staff is available and prepared to quickly respond according to the facility's approved fire safety plan.	• Regular fire prevention inspection cycles • Automatic fire detection and monitoring systems • Approved Fire Safety Plan and staff training • Pre-planning by fire suppression staff
Group C	Residential Occupancies	A residential occupancy is defined as one that is used by persons for whom sleeping accommodation is provided but who are not harboured or detained to receive medical care or treatment or are not involuntarily detained.	In Ontario, residential occupancies account for 70% of all structural fires and 90% of all fire deaths. Residential units that are located in multi-unit buildings, including secondary units in a house, pose additional risks due to egress and firefighting accessibility challenges.	• Home smoke alarm programs • Public education programming including home escape planning • Retro-fit and compliance inspection cycles for OFC compliance • Pre-planning by fire suppression staff • Fire Drills as required by the OFC

OBC Occupancy Classification	OFM Fire Risk Sub-Model Major Building Classifications	OFM Definitions	OFM Fire Related Risks	Proactive Measures for Reducing Risk
Group D	Business & Personal Services	A business and personal services occupancy is defined as one that is used for the transaction of business or the rendering or receiving of professional or personal services.	Many office buildings are occupied by a large number of people during business hours and contain high combustible content in the form of furnishings, paper, books, computers, and other office equipment/supplies. Those that are located in a high-rise building pose additional risks due to egress and firefighting challenges.	• Regular fire prevention inspection cycles to maintain OFC compliance • Targeted fire prevention inspections for OFC retrofit compliance • Staff training in fire prevention and evacuation procedures • Public education programs • Pre-planning by fire suppression staff

OBC Occupancy Classification	OFM Fire Risk Sub-Model Major Building Classifications	OFM Definitions	OFM Fire Related Risks	Proactive Measures for Reducing Risk
Group E	Mercantile	A mercantile occupancy is defined as one that is used for the displaying or selling of retail goods, wares, or merchandise.	Larger mercantile occupancies such as department stores are generally occupied by a large number of people and contain high quantities of combustibles in the form of merchandise, furnishings, and decorations. Customers may be unfamiliar with the building's exit locations and not know how to react in the event of an emergency. Additional hazards will be present in "big box" type stores that sell and store large volumes of combustible materials in bulk. These stores generally have similar properties to industrial warehouses with the additional hazard of higher number of occupants.	• Regular fire prevention inspection cycles • Automatic fire detection and monitoring systems • Approved Fire Safety Plan and staff training • Pre-planning by fire suppression staff

OBC Occupancy Classification	OFM Fire Risk Sub-Model Major Building Classifications	OFM Definitions	OFM Fire Related Risks	Proactive Measures for Reducing Risk
Group F	High/Medium/Low Hazard Industrial	An industrial occupancy is defined as one for the assembling, fabricating, manufacturing, processing, repairing, or storing of goods and materials. This category is divided into: • low hazard (F3) • medium hazard (F2) • high hazard (F1) based on its combustible content and the potential for rapid fire growth.	These occupancies constitute a special fire hazard due to high levels of combustible, flammable or explosive content and the possible presence of oxidizing chemicals and gases. Processing and other activities that involve various ignition sources often occur in these occupancies. The lack of security during non-operational hours also makes them susceptible to incendiary type fires. Industrial fires generally involve large quantities of combustible materials and potentially result in large financial losses (e.g. building, contents) and significant damage to the community's environment and economic well-being (e.g. loss of jobs).	• Regular fire prevention inspection cycles • Staff training in fire prevention and evacuation • Public education • Pre-planning by fire suppression staff • Installation of early detection systems (e.g., fire alarm systems, heat detectors) • Installation of automatic sprinkler systems • Approved Fire Safety Plans • Preplanning by fire suppression staff • Fire extinguisher training

3.2.1 City of Woodstock Existing Major Building Stock Classification Summary

Analysis of the city's major building occupancy types was conducted using data the 2021 census. 9 summarizes the city's existing major building occupancy classifications.

Table 9: Existing Major Building Classification Summary

OBC Occupancy Classification	OFM Fire Risk Sub-Model Major Building Classifications	Number of Occupancies	Percentage of Occupancies
Group A	Assembly Occupancies	107	0.65%
Group B	Care or Detention Occupancies	21	0.13%
Group C	**Residential Occupancies - Total**	**15574**	**94.77%**
	Single-detached	11155	67.88%
	Semi-detached	1512	9.20%
	Row	2434	14.81%
	Apartment > 5 Storeys	13	0.08%
	Apartment < 5 Storeys	460	2.80%
Group D	Business & Personal Services	67	0.41%
Group E	Mercantile	235	1.43%
Group F (all divisions) *	**Industrial Occupancies**	**372**	**2.26%**
Division F1	High Hazard	8	0.05%
Division F2	Medium Hazard	349	2.12%
Division F3	Low Hazard	15	0.09%
Other	Not classified in OBC- Farm	57	0.35%
	Not classified in OBC - Government	0	0.00%
	Total	16433	100.00%

**Source for breakdown is MPAC. (Numbers may differ from stats Canada.)*

Consistent with most other municipalities in Canada, Group C - Residential Occupancies represent the most prominent type of building occupancy type. Standard Incident Reporting (SIR) from the OFM indicates 71.68% of structure fire loss and 100% of the fatalities over the five-year period from January 1, 2019, to December 31, 2023, occurred within Group C - Residential Occupancies.

3.3 Building Age and Construction

The Ontario Building Code (OBC) was adopted in 1975, followed by the adoption of the Ontario Fire Code (OFC) in 1981. Together, these two codes have laid the foundation for eliminating many inconsistencies in building construction and maintenance that existed before their adoption.

The OBC and OFC were developed to ensure uniform building construction and maintenance standards are applied to all new building construction. These codes also mandate specific fire and life safety measures based on the building's intended use. Examples of addressed fire and life safety issues include:

- Occupancy
- Exits/means of egress including signs and lighting
- Fire alarm and detection equipment
- Fire service access
- Inspection, testing, and maintenance

In many cases, the age and construction of a building can be directly associated with whether it was constructed before or after the introduction of these codes. For instance, during the late 19th and early 20th centuries, balloon frame construction was common, allowing exterior walls to extend continuously from the main floor to the roof, often through multiple stories. This construction method facilitated unobstructed fire and smoke spread from the basement to the roof, resulting in rapid fire propagation without occupants' or firefighters' knowledge. The OBC implemented requirements to change this construction method and introduced additional measures to mitigate fire spread through wall cavities.

Similarly, the new codes recognize modern construction techniques such as lightweight wood frame construction, including the use of wood trusses and laminated veneer lumber. While these techniques and materials enhance construction efficiency and cost-effectiveness, they pose different challenges to firefighters compared to historical methods. For example, lightweight wood frame construction relies on structural components working together, so if one component fails due to exposure to high heat or fire, the entire roof system may fail. Lightweight construction is discussed further, later in this section.

Table 10 lists fire growth rates measured by the time it takes for a fire to reach one-megawatt (MW). Fire growth rate varies depending on the flammability of materials and contents within the building, introducing variances into the presented growth rates.

Table 10: Time to Reach 1 MW Fire Growth Rates in the Absence of Fire Suppression

Fire Growth Rate	Time in Seconds (Minutes) to Reach 1 MW	Time in Seconds (Minutes) to Reach 2 MW
Slow	600 seconds (10 minutes)	848 seconds (14.13 minutes)
Medium	300 seconds (5 minutes)	424 seconds (7.07 minutes)
Fast	150 seconds (2.5 minutes)	212 seconds (3.53 minutes)

Table Source: [7]

In addition to building construction, fire growth rate depends on the flammability of materials and contents within the building, which introduces variances into the growth rates presented above. The impact of increasing fire growth rates is directly related to the time lapse from ignition to flashover when the combustible items within a given space reach a temperature sufficiently high for them to auto-ignite. Figure 3 (below) illustrates the exponential increase in fire temperature and the potential for property and life loss as time progresses.

Figure 3: Fire Propagation Curve

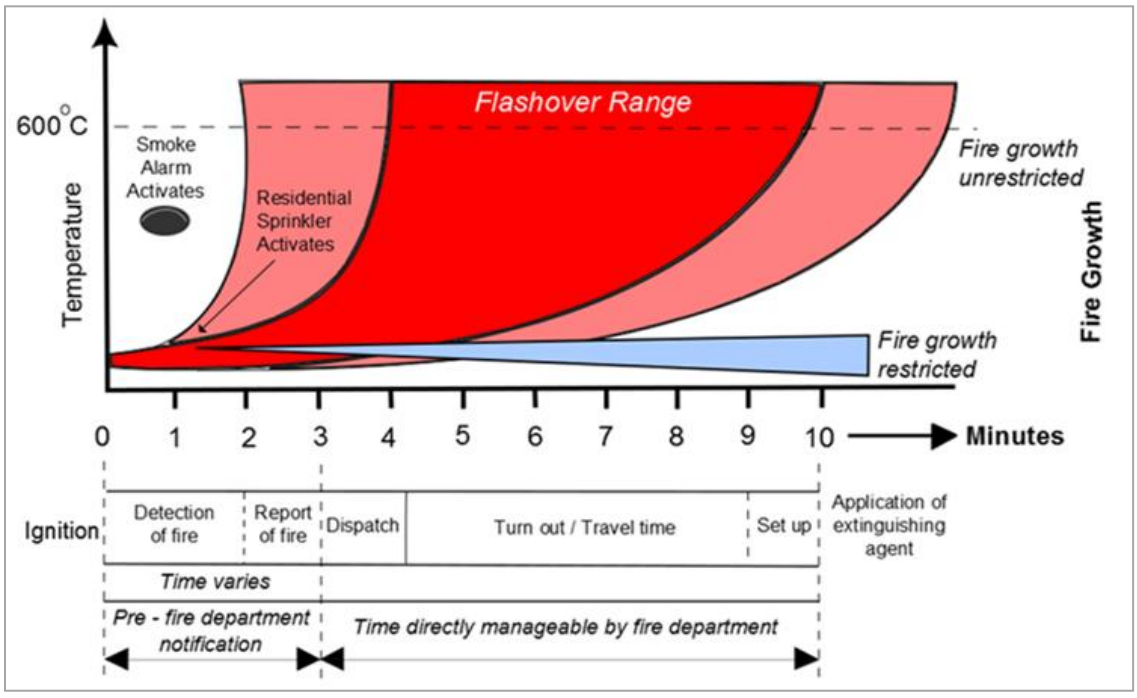


Figure Source: Fire Underwriters Survey "Alternative Water Supplies for Public Fire Protection: An informative Reference Guide for Use in Fire Insurance Grading" (May 2009) and NFPA "Fire Protection Handbook" (2001)

[7] *Office of the Fire Marshal and Emergency Management. (2017, May). Operational Planning: An Official Guide to Matching Resource Deployment and Risk Workbook.*

Understanding building construction and materials is crucial for firefighters to determine the appropriate fire attack strategies and safety measures needed. Therefore, knowledge of a building's age may directly correlate with the construction methods and materials used, making building age and construction a vital component of this CRA.

Table 11 summarizes the age of the building stock within the city prior to the adoption of the new codes (OBC and OFC). This analysis reveals that 45.54% of the city's building stock was built before 1981, preceding the adoption of the 1981 OFC. This represents a significant fire risk within the community, however lower than the provincial average. Further, 7,313 (40.54%) dwellings were built prior to 1975 and the adoption of the Ontario Building code and the requirement to meet safe building standards.

Table 11: Period of Construction of all Dwellings – City of Woodstock and Ontario[8]

Period of Construction	Woodstock Dwellings	Woodstock % of Dwellings	Ontario Total Number of Dwellings	Ontario % of Dwellings
Prior to 1961	4,914	27.24%	1,247,430	22.72%
1961-1980	3,301	18.30%	1,456,110	26.52%
1981-1990	2,045	11.34%	711,940	12.97%
Total prior to 1991	10,260	56.87%	3,415,480	62.21%
1991-2000	1965	10.89%	644,080	11.73%
2001-2005	941	5.22%	385,045	7.01%
2006-2010	1,383	7.67%	348,760	6.35%
2011-2015	1,089	6.04%	328,735	5.99%
2016-2021	1,976	10.95%	369,095	6.72%
Total 1991-2021	7,354	40.76%	2,075,715	37.80%
2022 - 2024	426	2.36%	N/A	N/A
Total Dwellings	18,040	100.00%	5,491,200	100.00%

[8] *Government of Canada, Statistics Canada*

3.3.1 Lightweight Construction

As of February 25, 2022, the OFM has directed that available information documenting the presence and location of truss and lightweight construction systems (referred to as lightweight construction) be utilized to inform pre-planning activities by fire departments. Buildings with lightweight construction pose a safety risk to responding firefighters, as they are known to be susceptible to premature failure and rapid collapse under fire conditions. Pre-plans provide responding fire departments with awareness of the presence of lightweight construction, enabling proactive fire response strategies to protect the safety of firefighters.

Truss and lightweight construction systems commonly use lightweight pre-engineered floor or roof systems such as wood I-beam joists, cold formed steel joists, wood truss assemblies with metal or wood plates and metal web wood joists. These construction systems are mainly used in residential house construction and are susceptible to pre-mature failure and rapid collapse under certain fire conditions.

Houses constructed with lightweight construction systems are predominantly situated north of Pittock lake, south of Oxford Road 17 and east of Arthur Parker Avenue. Below is a list of streets where structures have been built with lightweight construction material.

- Arthur Parker Avenue
- Thompson Street,
- Upper Thames Drive,
- Chandler Terrace,
- Silverwood Crescent,
- Preston Way,
- Huntingford Trail,
- Edinburgh Drive,
- Prince Charles Crescent,
- Queenston Boulevard,
- Sobeski Avenue,
- Knights Lane,
- Harwood Avenue,
- Harding Court,
- Knights Lane
- Cardinal Street between Falcon Drive and Devonshire Avenue

3.4 Building Density and Exposure

NFPA 1730 - Standard on Organization and Deployment of Fire Prevention Inspection and Code Enforcement, Plan Review, Investigation, and Public Education Operations (2019 Edition) highlights building density as a crucial factor for understanding potential fire risk, particularly in core areas like downtown districts. Closely spaced buildings, typical of historic downtown core areas and newer infill construction, may pose a higher risk of fire spreading to adjacent exposed buildings. In densely built-up areas with minimal building setbacks, a fire originating in one building could extend to neighboring structures due to their proximity. Moreover, the proximity of buildings can impede firefighting operations by limiting access for firefighters and equipment.

The adoption of the OBC and the OFC has required spatial separations and the use of fire-retardant materials and construction methods to mitigate fire risks. Basic firefighting practices prioritize the protection of exposures as a primary function and consideration during fire and emergency service responses. As mentioned earlier, older developments as well as new infill projects may present increased exposure risks due to higher building density.

Table 12 below illustrates a comparison of the city's existing Group C – residential building stock with that of the province, based on data from the Municipal Property Assessment Corporation (MPAC).

Table 12: Group C Residential Building Stock Comparison

Dwelling Type	Woodstock	Woodstock %	Ontario	Ontario %
Single Detached	11,155	71.63%	2,942,990	53.74%
Apartment > 5 Stories	13	0.08%	984,665	17.98%
Apartment < 5 Stories	460	2.95%	548,785	10.02%
Row House	2,434	15.63%	505,265	9.23%
Semi-Detached	1,512	9.71%	303,260	5.54%
Total	15,574	100%	5,476,215	100%

Table Source: (MPAC, 2024)

When examining the different dwelling types, it is observed that single detached structures (71.63%) make up the majority of Group C residential occupancies in Woodstock, which is greater than Ontario's average of 53.74%. Woodstock also notably has a higher proportion of semi detached and row housing compared to the province.

3.5 Building Height and Area

3.5.1 Building Height

One of the unique characteristics and risks of tall/multi-storey buildings is known as the "stack effect." This phenomenon is characterized by vertical air movement throughout the building, caused by airflow into and out of the building, typically through open doors and windows. The resulting buoyancy, due to differences in indoor/outdoor temperature and elevation, causes smoke and heat to rise within the building. This can lead to smoke permeation throughout common areas and individual units, contributing to a high percentage of deaths in high-rise buildings due to smoke inhalation. Taller buildings also tend to have higher occupant, and fuel loads due to the quantity of furnishings and building materials.

Efficient evacuation can be challenging due to a lack of direction, signage, or familiarity of occupants, potentially resulting in overcrowding of stairways and exit routes. Ensuring all required fire and life safety systems are in place and functioning is crucial for these occupancies. However, taller buildings may experience extended rescue/fire suppression response times for firefighters to ascend to upper levels, known as "vertical response." Strategies like "shelter-in-place," where occupants are directed to stay within their units, can be effective life safety measures. However, functional internal building communication systems are critical for the success of this strategy. Targeted public education campaigns addressing strategies like shelter-in-place are also vital for educating building occupants.

For the purposes of developing this Community Risk Assessment (CRA), the OBC/OFC definition has been used to analyze building height within the city, defining high-rise as 18 meters above grade or six storeys.

The following fire safety features are required by the OBC for new buildings, and the OFC for occupied buildings:

- Building services (ventilation, firefighter elevators, water supply, etc.)
- Non-combustible construction (concrete and steel)
- Interior finishes (drywall, block, concrete slab)
- Fire detection and notification of occupants (pull stations, heat detectors, fire detectors, alarm system)
- Compartmentation (containment of fire and smoke spread, fire doors, fire shutters, self-closing mechanisms on doors, etc.)
- Means of egress (stairwells constructed with non-combustibles)

- Fire protection system (automatic sprinklers, standpipes and hose cabinets, fire pumps, fire extinguishers, etc.)

These fire safety features are crucial for ensuring the safety of the public and firefighters alike. Currently, as displayed in Table 13, the city has 11 buildings classified as high-rise buildings according to the OBC, with floor levels 18 meters (59 feet) above grade or above six storeys.

In the high-rise risk buildings identified in Table 13 below, assurances of effective response force numbers should be considered to ensure that the appropriate number of firefighters are on-scene to complete critical tasks needed during fire suppression operations in these occupancies.

Table 13: Highrise Buildings in City of Woodstock[9]

Building	Address	Storeys
Northgate Towers	510 Admiral Street	8
Von Westerholt Manor	66 Burtch Street	8
Canterbury Place	635 Canterbury Street	8
Lakeside Estates 1	600 Chieftain Street	11
Lakeside Estates 2	700 Chieftain Street	11
Lakeside Estates 3	800 Chieftain Street	11
Lakeside Estates 4	900 Chieftain Street	11
Julianna Place 1	505 Finkle Street	8
Julianna Place 2	515 Finkle Street	8
Newport Village Tower A	955 James Street	12
Newport Village Tower B	20 Clarke Street	12

3.5.2 Building Area

Building area can present challenges comparable to those in taller buildings. Horizontal travel distances, rather than vertical ones, can lead to extended response times for firefighters conducting rescue or fire suppression activities. Large buildings, including industrial plants, warehouses, department stores, and big box stores, often contain significant volumes of combustible materials. Additionally, many of these occupancies utilize high rack storage systems, which can make fires difficult to access and increase risks to firefighter safety due to collapse hazards.

[9] *City of Woodstock Fire Department Community Risk Assessment, June 2024*

As part of the data collection process, MPAC data provided building size data for the City of Woodstock. Table 14 presents this information, showing that the majority of building stock (91%) has a total footprint of 2,500 square feet or less. Additionally, the summary indicates that 0.14% (25) of buildings have an area greater than 50,000 square feet or approximately 4,655 square meters. This includes the Toyota Manufacturing plant at over 724,000 square feet and two buildings over 200,000 square feet (General Motors warehouse and Toyota Boshoku manufacturing plant Woodstock has 10 occupancies with a footprint of more than 100,000 sq ft. Table 15 are occupancies listed at over 100,000 sq. ft.

Table 14: Dwellings Area

Dwelling Size (ft^2)	# of Buildings	% of all Buildings
0-2,499	16,367	91.27%
2,500-4,999	1,258	7.02%
5,000-9,999	144	0.80%
10,000-19,999	75	0.42%
20,000-49,999	63	0.35%
>50,000	25	0.14%
Total	17,932	100%

Table 15: Buildings over 100,000 sq. ft[10]

Address	Total Floor Area
715134 Oxford Rd 4	724,045
1401 Parkinson Rd	256,801
230 Universal Rd	220,339
353 Griffin Way	148,050
155 Beards Lane	146,010
193 Givins	127,211
700 College Ave	120,628
1000 Ridgeway Rd	117,600
45 Beard's Lane	112,843
301 Athlone Ave	110,997

[10] *Municipal Property Assessment Corporation (MPAC) 2024*

3.6 Potential High-Fire Risk Occupancies

Potential high-fire risk occupancy is a critical factor to consider within a city's building stock. High fire risk can be attributed to a combination of factors, including building density (exposures), building age, and construction. The term 'fuel load' typically refers to the quantity and nature of combustible content and materials within a building. This encompasses combustible contents, interior finishes, and structural materials. Combustible content poses the greatest potential fire loss risk, as higher fuel loads increase the likelihood of ignition and severity of fires.

In many communities, significant fuel loads can be found within a single occupancy, such as a building supply business, large multi-unit residential buildings, or historic downtown cores. This section of the CRA will primarily focus on fuel load considerations for industrial occupancies.

Table 16: Potential High Fire Risk Occupancies

Address	Facility Name/ Organization	Risk Description
1717 Dundas Street	Toyota Motor Manufacturing Canada	Car manufacturing plant
1401 Parkinson Road	General Motors of Canada	Warehouse
230 Universal Road	Toyota Boshoku	Auto part body supplier
920 Keyes Dr	Vuteq 1	Manufacturing of automotive interior trim
885 Keyes Dr	Vuteq 2	Manufacturing of automotive interior trim
1620 Commerce Way	Soprema	Manufacturing of roofing and insulation products
303 Tecumseh St	Embark Health Inc	Growing, processing and storage of cannabis
45 Beards Lane	Fast Leaf	Processing of Cannabis
1515 Commerce Way	Sysco	Processing of food products (Ammonia used in process
1403 Dundas St	Tigercat Industries	Manufacturing of forest cutting equipment
193 Givins St	ArcelorMittal	Fabrication of steel tubing materials and products
404 Main Streets	Cargill Agribrands Purina	Production of animal feed products
842 Juliana Dr	ADM Nutrition	Production of animal feed products
600 Pattullo Ave	Franklin Sandblasting and Paint	
1000 Ridgeway Dr	Hino Motors Canada	Automotive Manufacturing Plant
615 Jack Ross Ave	Kerry Foods	
155 Beards Lane	ZF TRW Automotive	Manufacturing of automotive brake parts
95 Norwich Ave	Norwich Recycling	Recycling plant
113 Winniette St	Roberts Warehousing	Warehousing

In addition to ensuring compliance with the requirements of the OBC and the OFC, fire services can implement operational strategies to address fuel load concerns. These strategies include regular fire inspection cycles and pre-planning of buildings of this nature, which provide an operational advantage in the event of a fire.

3.7 Occupancies with Potential High-Fire Safety Risk

Fire risk affects individuals differently, and some people are more vulnerable to fire injury or fatality than others. These vulnerable individuals may be unable to self-evacuate during a fire or require assistance in their evacuation efforts. Identifying the location and number of vulnerable individuals or occupancies within the community offers insight into the magnitude of this demographic within a community.

3.7.1 Registered Vulnerable Occupancies

From an occupancy perspective, vulnerable occupancies are those that house vulnerable individuals who may require assistance to evacuate in the event of an emergency due to cognitive or physical limitations, representing a potential high-life safety risk. The OFM defines vulnerable occupancy as any care occupancy, care and treatment occupancy, or retirement home regulated under the Retirement Homes Act.

These occupancies accommodate individuals such as seniors or people requiring specialized care. However, it's important to note that not all vulnerable individuals live in vulnerable occupancies; for example, some seniors who are vulnerable due to physical limitations can live on their own or in subsidized housing, making them a key demographic to reach.

Ontario Regulation 150/13: Fire Code, which amends Ontario Regulation 213/07: Fire Code, identifies vulnerable occupancies as care, care and treatment, and retirement homes. This includes hospitals, certain group homes, seniors' residences, and long-term care facilities. The regulation requires the fire service to perform annual inspections, approve and witness fire drill scenarios, and file certain information regarding the occupancy with the OFM. A list of 19 vulnerable occupancies is presented in Table 17.

Table 17: Vulnerable Occupancies

Property Name	Occupancy Type	Location
Woodstock General Hospital	Care and Treatment Occupancy	310 Juliana Drive
Sakura House	Hospice Care Occupancy	715180 Oxford Road 4
Caressant Care Nursing Home	Care Occupancy	161 Fyfe Avenue
Caressant Care Retirement Home	Retirement Home	161 Fyfe Avenue
Alternative Level of Care (ALC) at Caressant Care Home	Care Occupancy	161 Fyfe Avenue
Woodingford Lodge	Retirement Home	300 Juliana Drive
Park Place	Retirement Home	126 Graham Street
Chartwell Oxford Gardens	Retirement Home	423 Devonshire Avenue
Langdon Retirement Home	Retirement Home	196 Ferguson Drive
Victoria Manor	Retirement Home	265 Victoria Street North
Christian Horizons #1	Care Group Home	873 Dufferin Street
Christian Horizons #2	Care Group Home	289 Graham Street
Christian Horizons #3	Care Group Home	13-113 Bay Street
WDDS	Care Group Home	136 Anderson Street
WDDS	Care Group Home	104 East Park Drive
WDDS	Care Group Home	106 East Park Drive
WDDS	Care Group Home	373 Huron Street
WDDS	Care Group Home	334 Lansdowne Avenue
WDDS	Care Group Home	74 Pebble Beach Crt

3.7.2 Other High-Fire Life Safety Risk Occupancies

From a risk perspective, it is valuable for a fire service to identify additional potential high fire life-safety risk considerations, such as day care facilities and schools. Children, due to their age and potential cognitive or physical limitations, may face challenges in self-evacuation during an emergency. For the purposes of this CRA, potential high life-safety risk occupancy considerations include schools and licensed day care facilities. It's important to note that many schools also offer before and after childcare services for children aged 4-12, as well as childcare centers for infants to preschool-aged children.

Conducting pre-planning activities for all occupancies with vulnerable occupants is beneficial for fire services. These activities increase fire service personnel's familiarity with buildings of special interest and help reduce the risk faced by vulnerable individuals or vulnerable occupancies. Fire services can perform regularly scheduled fire safety inspections, approve and witness fire drill scenarios, provide public education on fire safety issues, conduct pre-planning exercises to increase familiarity with facilities, review fire safety plans for accuracy, encourage facility owners to update facilities as needed, provide staff training, and conduct fire drills. It's noted that the WFD includes vulnerable occupancies in their current pre-planning program. Table 18 and Table 19 list the schools and daycares in Woodstock, respectively.

Table 18: City of Woodstock Schools

School Name	Location
College Avenue Secondary School	700 College Avenue
Huron Park Secondary School	900 Cromwell Street
Woodstock Collegiate Institute	35 Riddell Street
St. Mary's Secondary School	431 Juliana Drive
Winchester Public School	110 Winchester Street
Central Public School	410 Hunter Street
Northdale Public School	290 Victoria Street N
Roch Carrier French Public School	840 Sloane Street
St. Patrick's School	346 Parkinson Road
St. Michael's School	1085 Devonshire Avenue
Holy Family School	177 Oxford Street
École Ste Marguerite Bourgeoys	700 Bristol Street
Eastdale Public School	65 Aileen Drive
Oliver Stephens Public School	164 Fyfe Avenue
Southside Public School	360 Albert Street
Algonquin Public School	59 Algonquin Road
Springbank Public School	1060 Sprucedale Road
Woodstock Christian School	800 Juliana Drive
Fanshawe College Woodstock/Oxford Regional Campus	369 Finkle Street

Table Source: https://www.cityofwoodstock.ca/en/live-and-play/schools.aspx

Table 19: City of Woodstock Daycares

Daycare Name	Location
Community Complex Childcare Centre	375 Finkle Street
Algonquin Childcare Centre	59 Algonquin Road
Oxford Gardens Childcare Centre	423 Devonshire Avenue
EarlyON Child and Family Centre	Market St. E.
Friendship Coop Daycare Centre	723 Dundas Street
YMCA Childcare Centre	808 Dundas Street
Wee Creations Preschool	808 Juliana Street

3.8 Historic or Culturally Significant Buildings

An understanding of the location of historic or culturally significant buildings or facilities is an important consideration within the building stock profile of a Community Risk Assessment. Such buildings or facilities may be keystone features of the community, providing a sense of heritage, place, and pride, and contributing to the overall importance of the community. Regular fire inspections of these buildings are essential, especially if they serve as tourism destinations, as fire incidents could have significant economic impacts.

Historic areas can present a high fire risk due to their age and the materials used to construct the buildings, as well as exposure cycles. Strategies to enforce continued compliance with the OFC are considered best practices for achieving the legislative responsibilities of the city and providing an effective fire protection program to address fuel load risks.

The City of Woodstock regulates numerous heritage properties through its municipal heritage register under the Ontario Heritage Act. Woodstock has identified 32 properties designated under Section 29. Notable heritage buildings include City Hall, 6 churches, the Art Gallery, Museum, Courthouse, and many private residences.

Pre-fire planning enhances fire department personnel's familiarity with these special buildings. The list of properties designated under Section 29 of the Ontario Heritage Act is detailed in Table 20.

A fire department can help reduce the risk of fire within heritage properties through regularly scheduled fire safety inspections, enforcement of the Ontario Fire Code, regular review of fire safety plans for accuracy, and encouraging facility owners to upgrade facilities as needed.

Table 20: Designated Heritage Properties

No.	Property Name	Address	Year Constructed
1	Rokewood and Fairview	479 Wellington Street North (now Jack Poole Drive)	1857
2	-	130 Finkle Street	1819
3	City Hall	500 Dundas Street	1899-1901
4	Hillcrest	735 Rathbourne Avenue	1832
5	-	419 Vincent Street	1849
6	Oxford County Board of Health	424 Buller Street	1854
7	Woodstock Museum NHS	466 Dundas Street	1853
8	Courthouse and County Offices	415 Hunter Street	1890-1892
9	Anglican Church	723 Dundas Street	1834
10	Public Library	445 Hunter Street	1909
11	The Hall	55 Chapel Street	1848
12	“Carbide” Home	210 Vansittart Avenue	1895
13	Local History Centre	419 Hunter Street	1876
14	-	84 Vansittart Avenue	1863-1864
15	Details Body Clinic	77 Light Street	1878
16	Armoury	94 Graham Street	1906
17	-	53 Vansittart Avenue	1870
18	Public Art Gallery	447 Hunter Street	1913
19	-	145 Delatre Street	1846
20	Gowanbank	329 Light Street	Circa 1890
21	-	81 Perry Street	Circa 1875
22	Central United Church	32 Riddell Street	1875
23	-	385 Brant Street	1890
24	Nesbit Home	257 Light Street	1860-1880
25	Dundas United Church	285 Dundas Street	1889
26	Knox Presbyterian Church	59 Riddell Street	1896
27	-	82 Wellington Street North	1860
28	Market Building	Market Square	1895
29	Calvary Pentecostal Church	24 Light Street	1886

No.	Property Name	Address	Year Constructed
30	Chalmers United Church	15 Vansittart Avenue	1929
31	Perry Street Fire Hall	12-14 Perry Street	1900
32	Railway Station	100 Victoria Street South	1880

3.9 Building Stock Profile – Identified Risks and Key Findings

Table 21: Building Stock Profile – Identified Risks and Key Findings

Identified Risk / Key Finding	Rationale
Identified Risk	Group C residential occupancies represent 94.79% of the city's existing occupancies. Standard Incident Reporting (SIR) from the OFM indicates 71.68% of structure fire loss and 100% of the fatalities over the five-year period from January 1, 2019, to December 31, 2023, occurred within Group C - Residential Occupancies.
Identified Risk	Information from MPAC data indicates that approximately 45.54% (8215 properties) of the city's building stock was constructed before 1981, prior to the adoption of the 1981 Ontario Fire Code (OFC).
Identified Risk	19 properties in Woodstock have been identified as having a potentially high fuel load, leading to an increased fire risk.
Identified Risk	The City of Woodstock has 10 occupancies with a footprint of more than 100,000 sq. ft.
Key Finding	The City of Woodstock currently has 19 occupancies that have been identified as a potential vulnerable occupancy.
Key Finding	The City has identified 32 heritage properties. These historic areas can present a high fire risk due to the age of the buildings, the materials used in their construction, and their exposure to other risks.

SECTION 4
CRITICAL INFRASTRUCTURE PROFILE

Critical infrastructure refers to the systems, facilities, and assets crucial for the functioning of society and the economy. As referenced in **O. Reg. 378/18**, the critical infrastructure profile assessment includes analyses of the capabilities and limitations of critical infrastructure, such as electrical distribution, water distribution, telecommunications, hospitals, and airports. The following section considers these critical infrastructure characteristics within the City of Woodstock.

4.1 Critical Infrastructure in the City of Woodstock

Ontario's Critical Infrastructure Assurance Program defines critical infrastructure (CI) as "interdependent, interactive, interconnected networks of institutions, services, systems, and processes that meet vital human needs, sustain the economy, protect public health, safety and security, and maintain continuity of and confidence in government." The program identifies nine critical infrastructure sectors: continuity of government, electricity, financial institutions, food and water, health, oil and natural gas, public safety and security, telecommunications, and transportation networks. Infrastructure is a complex system of interconnected elements where the failure of one could lead to the failure of others. The vulnerability of infrastructure is often linked to the degree to which one infrastructure component depends upon another. Therefore, it is critical that these elements be viewed in relation to one another and not in isolation.

For the purposes of this CRA, City of Woodstock-specific CI concerns are described in greater detail below.

4.1.1 Water Servicing & Infrastructure

Woodstock has a water supply system consisting of water storage and distribution, as well as numerous fire hydrants, mostly in the urban area of the city. Water distribution is owned by the County of Oxford; however, the city is responsible for the maintenance of the water distribution system and the maintenance of storm and sanitary sewer collections systems. Water supply is an essential component of firefighting and is accessible to the fire department through hydrant systems. A water supply shortage or damage to the distribution system could impede the fire department's ability to use these systems. There are fire department considerations for areas without adequate water flow and supply (hydrants).

Water supply is a critical infrastructure essential for firefighting. Having access to the city's water delivery systems is crucial for service delivery. The city has over 210 kilometers of water mains and over 980 fire hydrants. The majority of the regional water is obtained through 10 ground water wells. Seven of the wells are located in the Sweaburg Road area and 3 wells within the city.

4.1.2 Stormwater & Sanitary Servicing & Infrastructure

Stormwater facilities are designed to collect and manage runoff from rain and snowmelt, reducing the risk of flooding, erosion, and damage to property and infrastructure. Storm sewers are underground pipes that collect and transport stormwater runoff to nearby water bodies, such as rivers and lakes. Storm sewers prevent stormwater from flooding streets and buildings, and they help to control the water quality and quantity in natural water bodies. Stormwater services play a crucial role in managing and controlling the flow of stormwater runoff during rain events and mitigating the challenges and impacts related to flooding. This is especially relevant when considering the impacts of climate change.

Woodstock owns and maintains 28 stormwater facilities, ranging from small dry ponds to very large wet ponds and artificial wetlands. There are also many private facilities servicing commercial and industrial buildings. Most neighbourhoods built since the early 1980's have had some sort of ponds incorporated into them.[11]

Any disruption to the operation of stormwater facilities and storm sewers can have significant impacts on public safety, property, and the environment. For example, if storm sewers are not functioning correctly, they can cause flooding, property damage, and health hazards such as waterborne diseases. Therefore, they are considered critical infrastructure and need to be protected and maintained to ensure their proper functioning during extreme weather events.

Sanitary sewers are underground pipes that transport wastewater from homes, businesses, and industries to treatment plants where the wastewater is treated and cleaned before being released into rivers or lakes. The proper functioning of sanitary sewers is critical for preventing the spread of diseases, protecting public health, and preserving the environment. Any disruption to the operation of sanitary sewers can have significant impacts on public health and the environment, making it essential to consider them as part of critical infrastructure. The Woodstock Wastewater Treatment plant is located at 195 Admiral Street.

[11] *City of Woodstock Asset Management Plan*

4.1.3 Transportation Infrastructure

Transportation infrastructure includes highways, railways, airports, seaports, and public transit systems. Transportation infrastructure is critical infrastructure because it enables economic activity, public safety, social mobility, and environmental sustainability. Any disruption to the transportation infrastructure can have significant impacts on the functioning of municipalities and the economy, making it essential to protect and maintain it.

The following section provides an overview of the city's transportation infrastructure. Additional details on the transportation systems in the City of Woodstock are provided in the Geographic Profile.

4.1.3.1 Roads & Highways

As described in the Geographic Profile, the city is intersected by provincial highways 401, and 403 in addition to the Provincial highways, the city's road network is comprised of local, collector, arterial (County) and rural roads.

Major highways are of concern from the perspective of fire protection services due to the following factors:

- Incidents involving hazardous materials transport
- Motor vehicle collisions driving fire department and ambulance call volume
- Multi-lane and vehicle collisions can obstruct lane access for responding apparatus
- Traffic hazards (distracted drivers, high-speed movement) present safety considerations for responding crews.

Approximately 1430 emergency calls responded to between 2018 and 2023 pertain to motor-vehicle related incidents, this represents 88.81% of rescue calls and approximately 17.10% of all calls responded to by WFD during that period.

4.1.3.2 Rail

There are various rail lines that operate through Woodstock. The Canadian Pacific Kansas City (CPKC) network runs east-west through they City. CPKC operates freight services on the tracks that passes through Woodstock north of Thames River and Pittock Lake and continues south along the west side of the city. This line also services the Toyota Manufacturing Plant (TMMC) with service tracks located down to the plant. CPKC transports bulk commodities such as grain, coal, and potash, as well as intermodal freight which involves the movement of containers that can be transferred between ships, trucks, and trains.

VIA Rail Canada also operates along the CN Rail line considered the Toronto-Windsor corridor. The main train station and stop for VIA is the Woodstock Train Station located at Victoria Street South, between Wellington Street South and Henry Street.

Ontario Southland Railway also operates in Woodland, stemming off of the CPKC line and continuing southwest towards St. Thomas. The Ontario Southland Railway transports a diverse range of agricultural products, chemicals, and industrial products.

Rail lines and operations are of concern from the perspective of fire protection services due to the following factors:

- Accidents involving transportation of hazardous cargo could result in release hazardous material requiring hazardous materials response
- Potential for explosions, fires, and destabilization of surrounding structures
- For passenger train derailments or collisions, passenger and rail employee extrication and technical rescue may be required
- Difficulty accessing scene
- Major incidents resulting in long term recovery could delay daily shipment of goods and services, with potential negative affects to local economy.
- Potential risk for grass and brush fires along the track areas and threat to adjacent residential properties

4.1.4 Energy and Communications Infrastructure

Energy infrastructure includes the systems, facilities, and assets that generate, transmit, and distribute electricity, oil, and gas within the city. Within the City of Woodstock, Hydro One is the local utility for electricity. Natural Gas is provided by Enbridge Gas. There are a number of solar generating locations. These photovoltaic cell panels collet solar rays and convert them to electricity. These systems can present unique challenges for firefighters in the event of an incident at one of these sites. The most pertinent risk arising from these utilities relates to fallen hydro lines. Between 2018 and 2023 WFD responded to 62 calls for fallen hydro lines which is 14.86% of all public hazard calls. Table 22 below identifies the known solar generation locations.

Energy and utility infrastructure is significant from the perspective of fire protection services for the following reasons:

- the oil and natural gas subsector present operational hazards to first responders, including spills and personal injury, firefighter exposure to toxic or hazardous materials via inhalation, skin contact, and/or ingestion
- There is potential for explosion and/or fire

- Gas and oil supply could be limited across the city in the event of an emergency incident
- Firefighter safety considerations when responding to a fire at an electrical substation (e.g. high voltage electrical hazards and the presence of chemical hazards that are used to cool electrical conductors)
- Disruption to the electrical distribution system could disrupt emergency communication systems, or municipal power supply leading to a wide range of public health and safety concerns, requiring fire department assistance.

Communications infrastructure is considered critical infrastructure because it provides the necessary connectivity and communication services for the functioning of day-to-day life and the overall economy. Communications infrastructure includes the systems, facilities, and assets that enable the transmission and reception of voice, data, and video communications. Rogers, Bell, Fido, Execulink, and Telus provide major coverage throughout the city. There are several towers and switches around the city that play an important role in cable, internet, television, and landline services.

The combined energy and communications infrastructure within the City of Woodstock, includes hydro lines, pipelines, transmission lines, communications fibre lines, and Wi-Fi hotspots. The most pertinent risk arising from these utilities relates to fallen hydro lines. Between 2018 and 2023 WFD responded to 62 calls for fallen hydro lines which is 14.86% of all public hazard calls.

Table 22: City of Woodstock Solar Generation Locations

Infrastructure Name	Location
Solar Panel Farm	211 Tecumseh St.
Solar Panel Farm	255 Tecumseh St.
Arntjen Solar Inc.	113 Winniette Street
Industrial Building: Precision Machining, Riley Manufacturing	460 Industrial Ave.
Industrial Building: Lens Mill Store & E. McLaughlin	80 Norwich Ave.
formerly occupied by Woodstock Hydro	16 Graham St.
Industrial Building occupied by Trigon Construction	35 Ridgeway Dr.
Industrial Building occupied by North American Stampings	975 Pattullo Ave.
Commercial Building occupied by Zehrs Store	969 Dundas St.

Infrastructure Name	Location
Commercial Building occupied by Home Depot Store	901 Juliana St.
Industrial Building occupied by Enerworks Inc.	161 Fyfe Ave.
2-storey Residential Building	600 Brant St.
3-storey Residential Building	357 Devonshire Ave.
2-storey Residential Building (solar/glycol heating system)	742 Pavey St.
2-storey Residential Building (Oxford County Housing)	161 Fyfe Ave.

Table Source: City of Woodstock

4.1.5 Other Critical Infrastructure Considerations

General considerations and concerns related to each CI sector as it pertains to the provision of fire protection services for other critical infrastructure sectors are included in Table 24. A list of the critical infrastructure in Woodstock are included in Table 23.

Table 23: City of Woodstock Critical Infrastructure

Critical Infrastructure Name	Location
Hydro One	462 Woodall Way
Enbridge Gas	350 Beards Lane
Drinking Water Distribution	484981 Sweaburg Road/County Road 12
Wastewater Treatment Plant	195 Admiral Street
Execulink Telecom & Internet Service Provider	1127 Ridgeway Road

Table 24: Critical Infrastructure Overview

Sector	Identified Critical Infrastructure	Issues / Concerns
Finance	Banking Institutions	• A disruption to this sector may result in the inability to make transactions for things such as fuel and supplies, maintenance, utilities etc. • May create inability to pay workers • May result in compromised data and funds in reserves and allocated for payroll, purchasing, utility payment etc. • The city has 11 bank branches in the city
Health	Long-Term Care	• Disrupting large numbers of people with mobility issues • Potential communication issues • Need for specialized medical equipment • There are 19 vulnerable occupancy facilities in the city
	Outbreak/Illness	• A major outbreak or illness can create unexpected shortages in the workforce • Reduced staffing can result in an inability to run an apparatus in a certain part of the city, as well as affect ambulance and police services for widespread illnesses • Illnesses and outbreaks can also increase medical calls in the region and have an increased cost in replenishing medical PPE
	Health Centers	• There is 1 hospital in the city (Woodstock General Hospital) which has a 178-bed capacity, five operating rooms, 3 ICU beds and an emergency department.[12] There and hospitals located in Ingersol, St. Mary's, London, Kitchener, Tillsonburg. • There are numerous privately owned and operated walk-in clinics and doctors' offices in the city
Safety	Emergency Services	• There are two full time fire stations located in the city with 55 full time staff, 1 municipal police station, 2 Paramedic stations. Pre-hospital care and transport s delivered through Oxford County Paramedic Services.

[12] *City of Woodstock, 2022 HIRA*

Sector	Identified Critical Infrastructure	Issues / Concerns
		• Frequent or extreme emergency events could increase demand for emergency response services affecting the response capacity of the fire department, police service and Emergency Medical Services.
Food	Food Supply and Demand	• Food related infrastructure can include agriculture, major distribution centers or grocery stores, for example • Grocery stores and food distribution centers typically contain large amounts of ammonia used as a component of refrigeration systems • Fire responders should be aware of dangers related to ammonia release and response protocols. • One major distributor and warehouse is located in the city (Sysco Canada- 1515 Commerce Way)
Government	Municipal Government	• Municipal government closed due to extreme weather, cyber-attack, health emergency, location, civil disruption causes disruption to decision making, financial support, declaration of emergencies etc. • Municipal services are often interconnected, therefore the failure of one may lead to the failure or damage to other services or loss of continuity of operations. • Woodstock City Hall and Oxford County offices are located in the downtown core.
Manufacturing	Supply Chain Disruption	• Prolonged disruptions to supply chains can impact apparatus replacement due to manufacturing delays (resulting in them going over lifetime) • Supply disruptions also have an unforeseeable but potentially impactful financial impact on running apparatus, as well as the ability to obtain/replenish PPE.
	Industrial Sites	• According to the 2021 Statistics Canada Census, manufacturing in the City of Woodstock accounts for 24.32% of local industry (see Economic Profile) The City has 160+ industries with 11,000+ employees. Processing and other activities that involve various ignition sources often occur in these occupancies. Manufacturing facilities constitute a special fire hazard due to elevated levels of combustible, flammable or explosive content and the possible presence of oxidizing chemicals and gases

4.2 Critical Infrastructure – Identified Risks and Key Findings

*Table 24: Critical Infrastructure – Identified Risks and Key Find**ings***

Identified Risk / Key Finding	Rationale
Key Finding	Approximately 1430 emergency calls responded to between 2018 and 2023 pertain to motor-vehicle related incidents, this represents 88.81% of rescue calls and approximately 17.10% of all calls responded to by WFD during that period.
Key Finding	The most pertinent risk arising from these utilities relates to fallen hydro lines. Between 2018 and 2023 WFD responded to 62 calls for fallen hydro lines which is 14.86% of all public hazard calls.

SECTION 5
DEMOGRAPHIC PROFILE

As referenced in **O. Reg. 378/18**, the demographic profile assessment includes analysis of the composition of the community's population, respecting matters relevant to the community such as population size and dispersion, age, gender, cultural background, level of education, socioeconomic make-up, and transient population. The following sections consider these demographic characteristics within the City of Woodstock.

5.1 Population and Dispersion

Table 25 highlights the significant growth experienced by the City of Woodstock over a twenty-year period from 2001 to 2021, in both population and total private dwellings. The most substantial increases occurred between 2016 and 2021, with a change of 14.19% in population and 11.40% in total private dwellings. These rates of increase have continued steadily since then.

Table 25: Historic Growth in Population and Households – City of Woodstock

Year	Population	% Change	Total Private Dwellings	% Change
2001	33,269	---	13,743	---
2006	35,822	7.67	14,960	8.86
2011	37,754	5.39	16,448	9.95
2016	40,902	8.34	17,530	6.58
2021	46,705	14.19	19,528	11.40

Table Source: (MPAC, 2024)

5.1.1 Population Age

Identifying a community's population by age category is a core component of developing the CRA and identifying specific measures to mitigate risks associated with a specific age group, such as seniors. The 2021 Census identifies a total population of 46,704 for the City of Woodstock. The age distributions of the city's population and Ontario's population are compared in Table 26.

Table 26: Population by Age Group – City of Woodstock and Ontario

Age	Woodstock Population	Woodstock %	Ontario Population	Ontario %
0 to 4 years	2,715	5.81	683,515	4.81
5 to 9 years	2,874	6.16	764,430	5.37
10 to 14 years	2,645	5.66	803,850	5.65
15 to 19 years	2,485	5.32	801,455	5.63
20 to 24 years	2,455	5.26	895,600	6.30
25 to 29 years	3,035	6.50	975,400	6.86
30 to 34 years	3,415	7.31	981,210	6.90
35 to 39 years	3,300	7.07	948,030	6.67
40 to 44 years	3,020	6.47	890,160	6.26
45 to 49 years	2,750	5.89	894,580	6.29
50 to 54 years	2,650	5.67	941,270	6.62
55 to 59 years	3,170	6.79	1,040,160	7.31
60 to 64 years	3,045	6.52	966,575	6.80
65 to 69 years	2,640	5.65	813,215	5.72
70 to 74 years	2,330	4.99	691,280	4.86
75 to 79 years	1,660	3.55	469,485	3.30
80 to 84 years	1,175	2.52	325,110	2.29
85+	1,340	2.86	338,615	2.38
Total	46,704	100.00	14,090,805	100.00
Median Age of the Population	40.80	---	42.80	---
Population aged 14 and under	8,234	17.63	2,251,795	15.83
Population aged 65 and over	9,145	19.57	2,504,570	18.55
Population aged 55 to 64	6,215	13.31	2,006,735	14.11

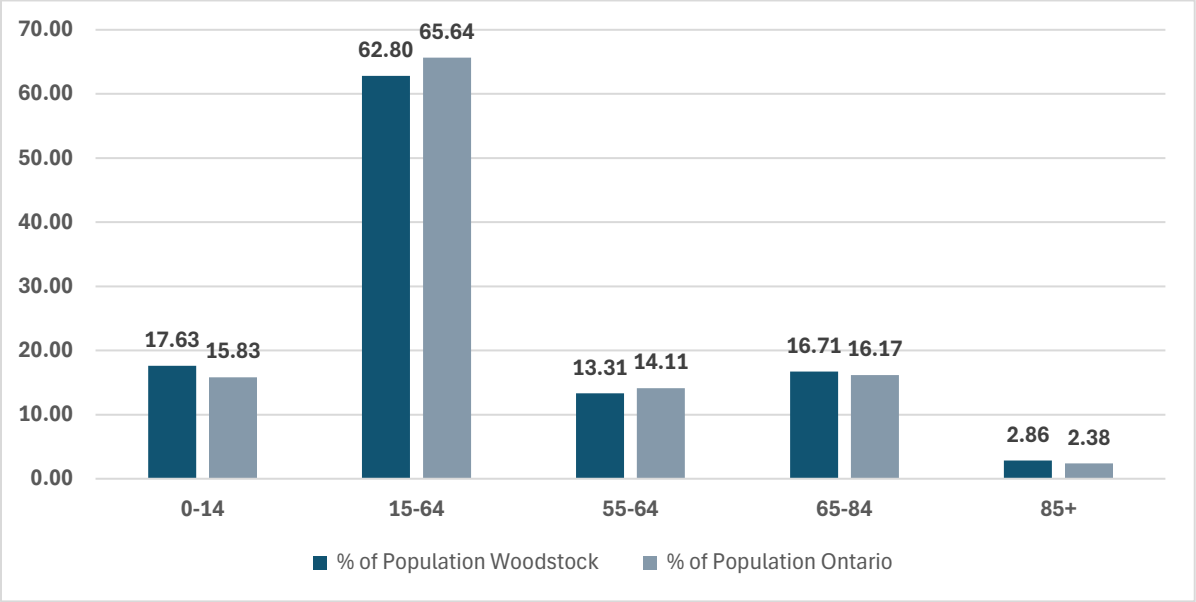
Table Source: 2021 Census, Statistics Canada

The youngest demographic, comprising individuals aged 14 years and under, accounts for 17.63% of the city's total population, which is higher than the province's average of 15.83%. Although they face a lower risk of fatality in residential occupancies compared to seniors or adults, youth in this age group remain an essential demographic for public education efforts. Therefore, directing public education and prevention programs toward this demographic holds significant value. Implementing structured education programs consistently for children and youth can effectively embed fire and life safety awareness and knowledge into future generations. It is noted that there are 14 public elementary schools and 4 secondary schools in the city. Providing access to this age demographic directly through the school system is an optimum way to promote public fire safety education.

The percentage of the population aged 65 years and older in Woodstock represents 19.57% of the total population, which is higher than the province's rate of 18.55%. Additionally, 13.31% of the city's population falls between the ages of 55 and 64, gradually aging into the senior demographic of 65 years and older. This larger population of older adults as a whole, highlights the significance of implementing early intervention and prevention programs to mitigate fire risks as this cohort transitions into the senior demographic. Based on historic residential fire fatality data, this population faces greater risks. These demographic trends emphasize the importance of developing informed, **targeted public education programs** and risk reduction strategies within the community.

Figure 4 illustrates the age group comparisons between Woodstock and Ontario.

Figure 4: Percent of Population by Age Group – City of Woodstock and Ontario



A community's population by age is an important factor in identifying specific measures to mitigate risks associated with age groups, such as seniors. Canada's aging population has emerged as one of the most significant demographic trends. According to Statistics Canada, from 2016 to 2021, Canada experienced a notable increase in the proportion of seniors since Confederation, primarily due to the baby boomer generation reaching the age of 65. Presently, there are more Canadians over the age of 65, accounting for 18.98% of the population, than there are children aged 14 years and younger, who make up 16.25%.

Seniors, defined as individuals aged 65 years and over, are regarded as one of the highest fire risk groups across the province, based on the residential fire death rate (fire deaths per million of population). Figure 5 illustrates the number of fire deaths in Ontario, between 2011 and 2020, highlighting seniors' increased vulnerability to fatality in residential occupancies compared to other age groups.

Figure 5: 2011-2020 Residential Fire Death Rate by Age of Victim

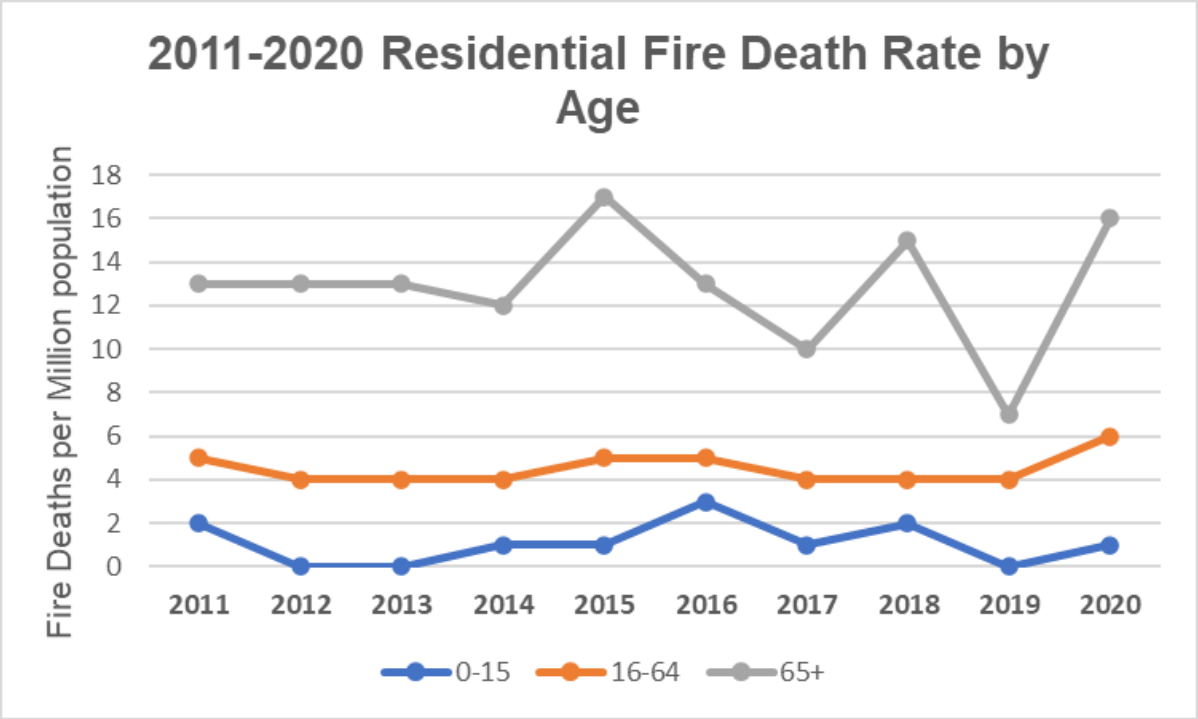


Figure Source: Adapted based on OFM reported residential fatal fires[13]

[13] *Office of the Fire Marshal and Emergency Management (revised 2018, November), Ontario Residential Fatal Fires, Retrieved from the Ministry of the solicitor General Website*

5.1.2 Population Age by Dissemination Area

Further analysis of age-based population distribution is illustrated in Figure 6 and Figure 7, portraying the distribution across dissemination areas.

Figure 6: Population Distribution Ages 0-14

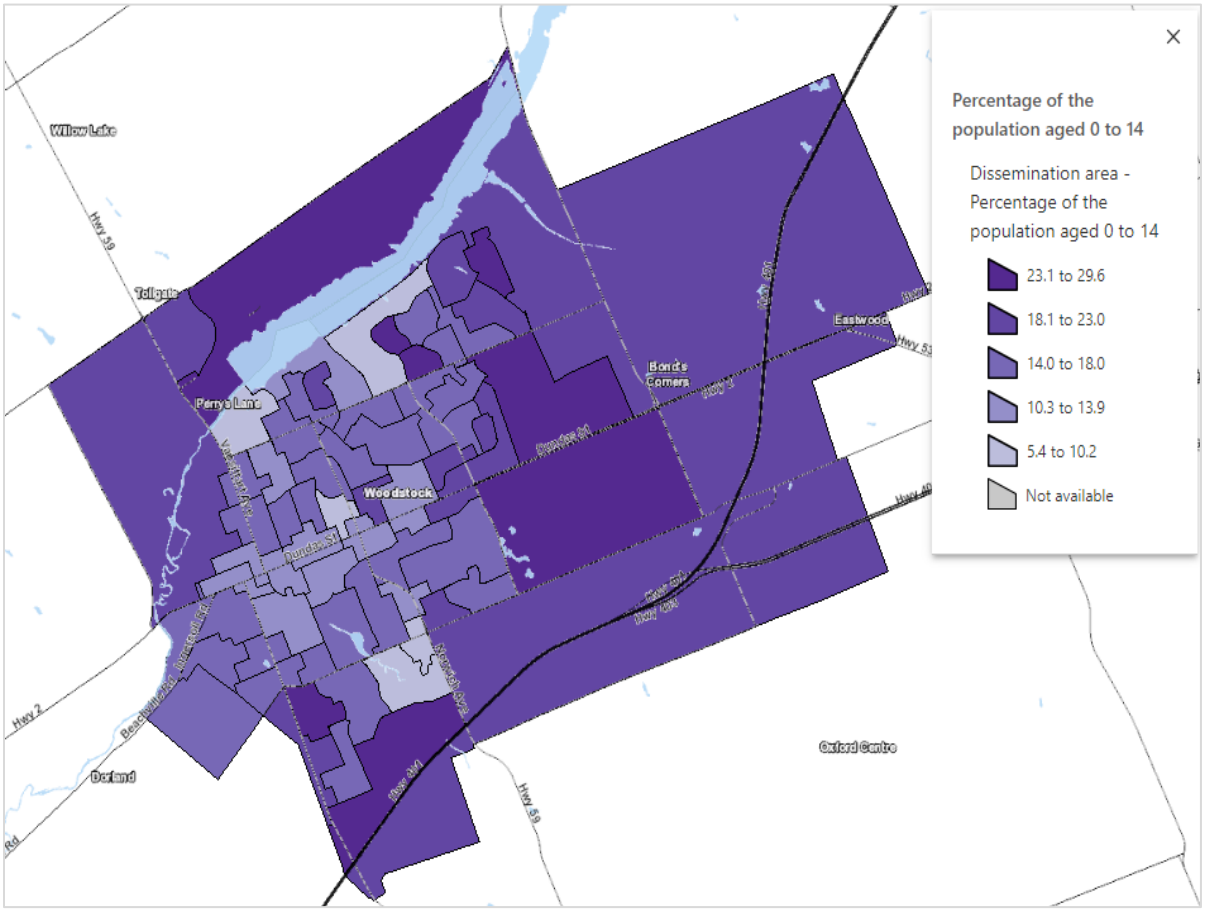


Figure Source: 2021 Census, Statistics Canada

Figure 7: Population Distribution Age 65 and Over

Figure Source: 2021 Census, Statistics Canada

5.2 Gender

NFPA 1730: Standard on Organization and Deployment of Fire Prevention Inspection and Code Enforcement, Plan Review, Investigation, and Public Education Operations (2019 Edition) integrates gender considerations into Community Risk Assessments, acknowledging historical data indicating a higher incidence of fire-related injuries or fatalities among males. In the City of Woodstock, Figure 8 outlines the gender distribution by age, with males representing 48.83% and females 51.17%, closely aligning with the provincial gender ratio of 49.11% men and 51.10% women. Gender-based refinements in public education programming in Woodstock may not be necessary.

Figure 8: Gender Distribution by Age Group – City of Woodstock

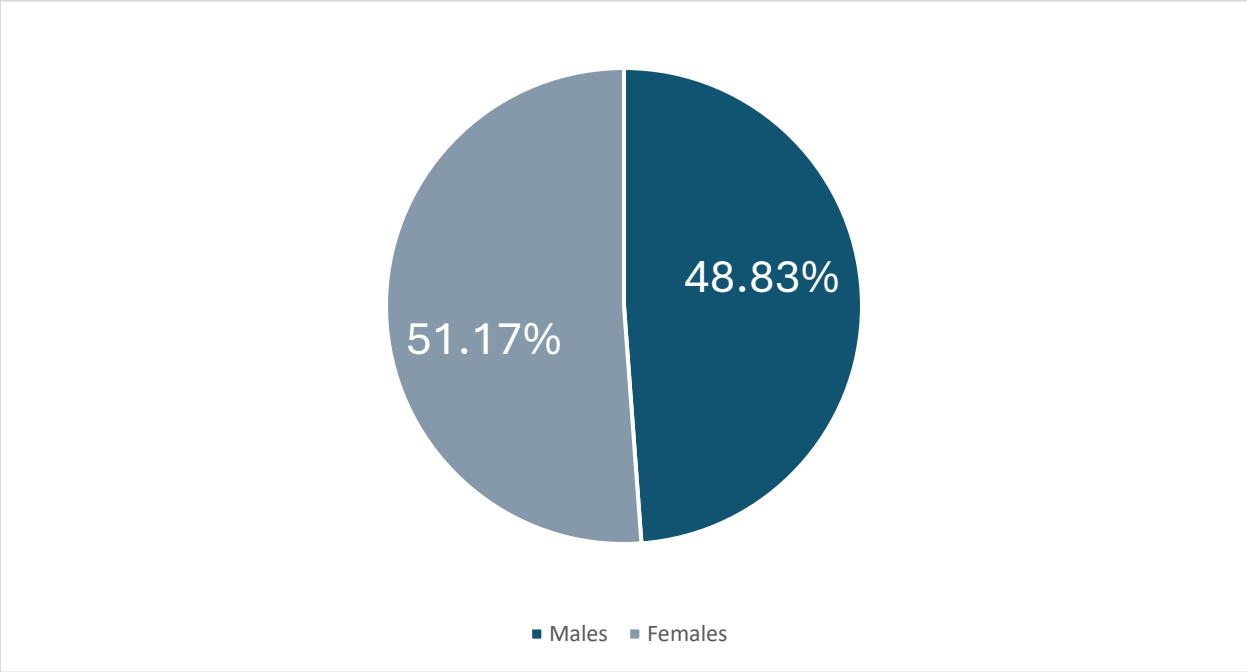


Figure Source: (MPAC, 2024)

5.3 Socioeconomic Circumstances

Socioeconomic circumstances of a community are known to have a significant impact on fire risk. Socioeconomic status is reflected in an individual's economic and social standing and is measured in a variety of ways. These factors can be reflected in the analysis of socioeconomic indicators such as labour force status, educational attainment, and income as well as household tenure, occupancy, suitability, and cost.

Socioeconomic factors intersect in several ways and have direct and indirect impacts on fire risk. One such example is outlined in the OFM's Fire Risk Sub-Model. The Sub-Model refers to the relationship between income and fire risk. As one consideration, households with less disposable income may be less likely to purchase fire safety products (e.g., smoke alarms, fire extinguishers, etc.), which puts them at higher risk of experiencing consequences from a fire. Another consideration is that households living below the poverty line may have a higher number of persons per bedroom in a household and/or children who are more likely to be at home alone. These circumstances would impact both the probability and consequence of a fire. While these complex relationships between socioeconomic circumstances and the probability / consequence of a fire are not well understood, this CRA seeks to explore these factors.

The factors reviewed at a high level have been selected based on the data available from Statistics Canada. Socioeconomic factors such as income decile group and median household income have been displayed spatially throughout this section.

Factors that are highlighted in this section include:

- Labour force status
- Immigrant status
- Educational attainment
- Household tenure, occupancy, suitability, and cost

5.3.1 Labour Force Status

Those who are economically disadvantaged, including low-income families, the homeless, and perhaps those living alone, may experience a higher fire risk. The OFM's Fire Risk Sub-Model references several reports that suggest there is a correlation between income levels and fire risk. The reports identify the following factors:

- The higher number of vacant buildings found in low-income neighborhoods attract the homeless. This introduces risks such as careless smoking, drinking, and unsafe heating practices.
- Building owners are less likely to repair building systems (electrical, mechanical, suppression) due to affordability, increasing fire risk from improper maintenance.
- Households with lower disposable income are less likely to purchase fire safety products (i.e., smoke alarms, extinguishers, cigarette ignition-resistant furniture, etc.) due to affordability.
- Households with lower disposable income are more likely to have utilities shut off due to non-payment, leading to increased risks related to unsafe heating, lighting, and cooking practices.
- The 1981 report, "Fire-Cause Patterns for Different Socioeconomic Neighborhoods in Toledo, Ohio," determined that the incendiary fire rate in low-income neighborhoods is 14.4 times higher compared to areas with the highest median income. Further, fires caused by smoking and children playing occurred at rates 8.5 and 14.2 times higher, respectively.
- Single-parent families are more economically challenged since there is only one income. These households also have fewer resources to arrange childcare, increasing the likelihood of fires caused by unsupervised children.

- Studies have shown that cigarette smoking is inversely related to income. In Canada, findings by the Centre for Chronic Disease Prevention and Control through the National Population Health Survey established that there were nearly twice as many smokers in the lowest income group when compared against the highest (38% vs. 21% respectively).
- Those with low education and literacy levels are inhibited in their ability to read instruction manuals and warning labels and less likely to grasp fire safety messages.

Labour force status is a possible indicator of income levels which directly influence fire risk (e.g., lower income, increased fire risk). The participation rate (i.e., the proportion of residents in the labor force) can also be an indicator of income and can be considered alongside unemployment rates (e.g., lower participation rate and higher unemployment could mean lower income, higher fire risk).

26 details the labor force statistics for Woodstock compared to Ontario. Woodstock's participation and employment rate percentages align with the provincial statistics.

Table 27: Labour Force Status – City of Woodstock and Ontario

Status	Woodstock Total	Ontario Total
In the Labour Force	23,860	7,399,200
Employed	20,980	6,492,895
Unemployed	2,880	906,310
Not in the Labour Force	13,860	4,383,620
Total*	37,720	11,782,820
Participation Rate	63.26%	62.80%
Employment Rate	55.62%	55.10%
Unemployment Rate	12.07%	12.25%

**Total - Population aged 15 years and over by labour force status*

Table Source: (MPAC, 2024)

5.3.2 Educational Attainment

The relationship between educational attainment and income is complex. An analysis conducted by Statistics Canada has found that high-income Canadians are generally more likely to be highly educated. Approximately two thirds (67.10%) of the top 1% had attained a university degree compared to 20.90% of all Canadians aged 15 and over.

Based on this national trend and for the purposes of this Community Risk Assessment, it is assumed that higher education leads to more disposable income and a lower fire risk. It is also assumed that households with higher disposable income are more likely to invest in fire life safety products such as fire extinguishers and smoke alarms, reducing the fire risk.

Table 28 compares educational attainment levels between the City of Woodstock and the Province of Ontario using 2021 Census data. The data indicates that Woodstock residents generally have lower educational attainment compared to the provincial average. Woodstock exhibits a higher-than-average percentage of individuals without a certificate, diploma, or degree (19.96% compared to the provincial average of 15.28%) and a lower-than-average percentage of residents with a post secondary certificate, diploma, or degree in comparison to provincial averages. Those holding a high school diploma, or equivalent, is slightly higher than the provincial average. This trend suggests increased awareness of fire safety practices and potentially correlates with lower rates of accidental fires due to negligence.

Table 28: Educational Attainment – City of Woodstock and Ontario

Educational Attainment	Woodstock Total	Woodstock %	Ontario Total	Ontario %
No Certificate / Diploma / Degree	7,530	19.96	1,799,890	15.28
High School Diploma or Equivalent	12,665	33.57	3,204,170	27.19
Postsecondary Certificate; Diploma or Degree	17,530	46.47	6,778,765	57.53
Total	37,725	100.00	11,782,825	100.00

Table Source: 2021 Census, Statistics Canada

5.3.3 Median Income

Table 29 presents median income statistics for Woodstock in 2020, displaying higher individual income levels and lower household income levels compared to the Ontario averages. The median individual income in Woodstock was $42,000, which reflects an 1.90% difference compared to Ontario's median individual income of $41,200. Conversely, the median household income in Woodstock was $82,000, indicating a 10.96% difference from Ontario's median household income of $91,000. Lower median household incomes in Woodstock may indicate a less affluent community with less-resourced households, potentially leading to weaker fire prevention measures and more unsafe living conditions.

Table 29: Median Income of the City of Woodstock and Ontario - 2020

Geography	Median Income Individual	Median Income Household
Woodstock	$42,000	$82,000
Ontario	$41,200	$91,000
% Difference	1.90%	10.96%

Table Source: (MPAC, 2024)

5.3.3.1 Income Decile Groups

Income can also be examined through the lens of income decile groups, which offer a rough ranking of an individual's economic status based on their relative position in the Canadian distribution of adjusted after-tax income of economic families, as defined by Statistics Canada[14].

Table 30 presents data on economic family income decile groups for the population in private households in Woodstock compared to Ontario. In Woodstock, 52.89% of the population falls within the bottom half of the income distribution, while 47.11% are in the top half. This distribution contrasts with Ontario, where a larger proportion (46.44%) is in the lower half of the income distribution, and 53.56% are in the top half. These statistics indicate a higher concentration of higher-income households in Woodstock compared to the provincial average, which can influence the community's economic resilience and potentially impact fire risk and emergency preparedness. Understanding income distribution within the community is crucial for the fire department's risk assessment and resource allocation efforts.

Table 30: Economic Family Income Decile Group for the Population in Private Households – City of Woodstock and Ontario

Decile Group	Woodstock Total	Woodstock %	Ontario Total	Ontario %
In the bottom half of the distribution	24,305	52.89	6,516,085	46.44
In the top half of the distribution	21,645	47.11	7,515,670	53.56
Total	45,950	100.00	14,031,755	100.00

Table Source: (MPAC, 2024)

[14] *Statistics Canada. (Updated 2016). Income Decile Group. Retrieved from Statistics Canada Website*

5.3.4 Housing Tenure

Housing tenure, particularly the rate of homeownership, serves as a significant indicator of socioeconomic status within a community. A higher rate of homeownership often suggests greater wealth, stability, and higher incomes, whereas a higher rate of rental properties may reflect lower incomes and socioeconomic challenges.

Lower homeownership rates are generally associated with higher fire risk due to several factors. Homeowners typically invest in property maintenance and are more likely to have access to fire prevention resources and insurance. In contrast, rented properties may experience higher turnover rates, potentially leading to neglect of fire safety measures by tenants or landlords.

In Woodstock, the majority of households (65.17%) are owned, while the remaining percentage (34.83%) are rented. This ownership trend is almost on par with the provincial average, where 68.40% of households are owned and 31.41% are rented. The high rate of homeownership in Woodstock can significantly influence community stability and investment in property maintenance, indirectly impacting fire risk and emergency response dynamics.

Table 31: Household Tenure – City of Woodstock and Ontario

Household Tenure	Woodstock Total	Woodstock %	Ontario Total	Ontario %
Owner	12,310	65.17	3,755,720	68.40
Renter	6,580	34.83	1,724,970	31.41
Provided by Government, First Nation, or Indian Band	0	0.00	10,510	0.19
Total	18,890	100.00	5,491,200	100.00

Table Source: (Environics Analytics, 2023; MPAC, 2024)

5.3.4.1 Occupancy

A higher proportion of multiple persons per household can contribute to increased fire risk and potential fire loss. As shown in Table 32, the City of Woodstock has a smaller proportion of households with two or more occupants per room (1.09%) compared to the provincial rate (2.96%). This lower occupancy density within households can decrease the risk of fire incidents.

Table 32: Household Occupancy

Household Occupancy	Woodstock	Woodstock %	Ontario	Ontario %
One person or fewer per room	18,685	98.91	5,328,575	97.04
More than one person per room	205	1.09	162,625	2.96
Total	18,890	100.00	5,491,200	100.00

Table Source: (MPAC, 2024)

5.3.4.2 Suitability

The 2021 Census data, as presented in Table 33, indicates that the City of Woodstock has a notably lower percentage of housing deemed unsuitable compared to Ontario as a whole. Specifically, only 3.76% of the city's housing is classified as not suitable, contrasting with 6.72% in the province. Housing suitability is determined based on whether the dwelling has adequate bedrooms relative to the ages and relationships among household members, according to the National Occupancy Standard. This discrepancy suggests that Woodstock has a lower fire risk from the perspective of housing suitability compared to the province.

Table 33: Household Suitability – City of Woodstock and Ontario

Housing Suitability	Woodstock Total	Woodstock %	Ontario Total	Ontario %
Suitable	18,175	96.24	5,122,185	93.28
Not suitable	710	3.76	369,015	6.72
Total	18,885	100.00	5,491,200	100.00

Table Source: (MPAC, 2024)

5.3.4.3 Housing Costs

The cost of housing often reflects a household's disposable income, which can influence their ability to invest in household fire safety measures. In Woodstock, where fewer households (21.59%) spend 30% or more of their income on housing compared to Ontario (24.23%), as shown in Table 34, there may be more financial flexibility for fire safety investments.

Despite lower housing values in Woodstock compared to Ontario, as referenced in Table 35, the median monthly shelter costs for owned dwellings are comparable, while for rented dwellings, Woodstock costs are slightly lower. This affordability may allow residents to allocate more resources to fire safety measures, potentially lowering fire risk.

Table 34: Shelter Costs – City of Woodstock and Ontario

Shelter Costs	Woodstock Total	Woodstock %	Ontario Total	Ontario %
Spending less than 30% of household total income on shelter costs	14,780	78.41	4,103,320	75.77
Spending 30% or more of household total income on shelter costs	4,070	21.59	1,312,095	24.23
Total	39,075	100.00	5,415,415	100.00

Table Source: (MPAC, 2024)

Table 35: Median Costs – City of Woodstock and Ontario

Median Costs	Woodstock	Ontario
Median value of dwellings	$536,000	$700,000
Median monthly shelter costs for owned dwellings	$1,320	$1,440
Median monthly shelter costs for rented dwellings	$1,190	$1,300

Table Source: (MPAC, 2024)

5.4 Cultural Background, Language Considerations

In the City of Woodstock, where the proportion of newcomers is significantly lower (14.82%) compared to Ontario (29.98%), cultural background and language considerations remain crucial factors for fire service providers when developing and delivering fire prevention and public education programs. While the immigrant population is smaller, communication barriers, including language proficiency and literacy levels, continue to be important to address. Even with a lower proportion of newcomers, there may still be familiarity challenges related to fire safety standards within immigrant populations. Therefore, targeted education initiatives are necessary to ensure that all residents, regardless of cultural background or language proficiency, have access to essential fire safety information and resources. Table 36 summarizes the immigration status of Woodstock's population.

Table 36: Immigration Status – City of Woodstock and Ontario

Immigration Status	Woodstock	Woodstock %	Ontario Population	Ontario %
Non-immigrants	38,855	84.56	9,437,320	67.26
Immigrants	6,810	14.82	4,206,585	29.98
Before 1980	2,115	31.06	860,305	20.45
1980 to 1990	735	10.79	506,195	12.03
1991 to 2000	820	12.04	852,765	20.27
2001 to 2010	1,355	19.90	941,630	22.38
2011 to 2015	835	12.26	461,010	10.96
2016 to 2021	955	14.02	584,680	13.90
Non-permanent residents	285	0.62	387,850	2.76
Total	45,950	100.00	14,031,755	100.00

Table Source: (MPAC, 2024)

Table 37 provides insights into language demographics in the City of Woodstock and Ontario based on the 2021 Census. In Woodstock, 93.29% of the population knows only English, while 5.57% are proficient in both English and French. Additionally, a small percentage (1.10%) have no knowledge of English or French. However, a deeper exploration into "mother tongue" languages reveals a diverse linguistic landscape.

The predominant language group comprises Indo-European languages other than English, followed by Indo-Aryan languages such as Punjabi (Panjabi). Slavic languages, Italian, Portuguese, and Spanish languages also feature prominently. Beyond these top languages, there is a notable presence of other language groups and specific languages contributing to the linguistic diversity of Woodstock. As Woodstock grows, it's important to address potential communication barriers arising from this diversity to ensure effective community engagement and emergency communication strategies.

Table 37: Knowledge of Official Language – City of Woodstock and Ontario

Language	Woodstock Total	Woodstock %	Ontario Total	Ontario %
English Only	43,180	93.29	12,196,575	86.50
French Only	15	0.03	39,310	0.28
English and French	2,580	5.57	1,519,365	10.78
Neither English nor French	510	1.10	344,545	2.44
Total (non-institutional)	46,285	100.00	14,099,795	100.00

Table Source: (MPAC, 2024)

5.5 Transient Populations and Commuting

Ontario Regulation 378/18 mandates the consideration of "transient populations", referring to population shifts occurring within a community at various times during the day, week, or year. Population shifts can stem from factors like employment, tourism, and education. In some municipalities, residents routinely leave for work, contributing to increased traffic and possibly more motor vehicle collisions. Other communities may serve as major tourist destinations, leading to significant population fluctuations based on seasonal tourism activities. This can heighten the demand for fire protection services, especially concerning overnight tourism accommodations. Additionally, educational institutions can draw transient student populations who commute daily or reside in dormitories or student housing seasonally.

Student accommodations and short-term rental units present distinct fire safety challenges, often arising from the conversion of houses into boarding houses or rooming house accommodations that do not adhere to the Ontario Fire Code (OFC) or Ontario Building Code (OBC). Identifying these properties poses a challenge for fire prevention division staff tasked with enforcing fire codes.

5.5.1 Commuter Populations

Commuter populations represent a significant portion of Woodstock's labour force. Table 38 shows the commuting destination trends for the residents of the city based on 2021 Census data. Among Woodstock's labour force, 61.82% commute locally within their census subdivision (CSD) of residence, while 8.69% travel to nearby areas within the same Census Division (CD). Additionally, 29.35% of Woodstock residents commute to other locations within the same province, a significantly higher proportion than Ontario's rate of 23.50%, likely influenced by the city's proximity to major metropolitan areas.

Table 38: Commuting Destinations – City of Woodstock and Ontario

Commuting Destination*	Woodstock Labour Force	%	Ontario Labour Force	%
Commute within census subdivision (CSD) of residence	9,530	61.82	2,212,620	58.72
Commute to a different CSD within Census Division (CD) of residence	1,340	8.69	653,055	17.33
Commute to a different CSD and CD within province or territory of residence	4,525	29.35	885,485	23.50
Commute to a different province or territory	20	0.13	17,050	0.45
Total	15,415	100.00	3,768,210	100.00

Table Source: (MPAC, 2024)

**Commuting destination for the employed labour force aged 15 years and over in private households with a usual place of work - 25% sample data*

Table 39 provides insights into the timing of commutes to work among Woodstock residents aged 15 years and over. The data reveals that most commuters leave for work during peak morning hours, with 36.01% departing between 7 AM and 8:59 AM. Additionally, a significant portion of commuters (21.78%) begin their journeys between 6 AM and 6:59 AM. These patterns emphasize the significance of understanding peak commuting times for emergency planning, particularly during periods of high travel activity when motor vehicle collision calls are more likely.

Table 39: Time of Commute to Work

Time Leaving for Work*	Labour Force	%
Between 5 AM and 5:59 AM	2,490	13.96
Between 6 AM and 6:59 AM	3,885	21.78
Between 7 AM and 7:59 AM	3,745	20.99
Between 8 AM and 8:59 AM	2,680	15.02
Between 9 AM and 11:59 AM	1,430	8.02
Between 12 PM and 4:59 AM	3,610	20.24
Total	17,840	100.00

Table Source: (MPAC, 2024)

**Total time leaving for work for the employed labour force aged 15 years and over with a usual place of work or no fixed workplace address - 25% sample data*

5.5.2 Tourism

An increase in tourism can lead to heightened demand for fire protection services, particularly with overnight accommodations. The City of Woodstock hosts several events and attractions annually, drawing both residents and non-residents. These events, which include annual festivals and gatherings, contribute to increased foot traffic and activity within the community. Notable festivals and events held throughout the year include:

- **Woodstock Fall Fair:** Held in September at the Woodstock Fairgrounds, this traditional fair includes agricultural exhibits, livestock shows, a midway, live entertainment, and various competitions.
- **Woodstock Farmers' Market:** A weekly event running from May to October on Main Street in Downtown Woodstock, offering fresh produce, local products, and artisanal goods.
- **Woodstock Street Festival:** Occurs in June in Downtown Woodstock, featuring live music, food vendors, artisan booths, and various entertainment activities.
- Woodstock Ribfest: Takes place in July at Country Heritage Park, this food festival features BBQ vendors, live music, and family-friendly activities.
- **Woodstock Santa Claus Parade:** Held in November or December in Downtown Woodstock, this festive parade includes floats, marching bands, and Santa Claus, marking the start of the holiday season.
- **The Steam-Era Show:** Takes place over Labour Day Weekend at the Woodstock Fairgrounds, showcasing antique tractors, steam engines, and farm equipment, along with demonstrations and children's activities.
- **Woodstock Film Festival:** Held in January at FirstOntario Arts Centre Woodstock, this festival features independent and international films, along with screenings and Q&A sessions.
- **Canada Day Celebrations:** Celebrated on July 1st at the Woodstock Fairgrounds, this event includes fireworks, live music, and various family-friendly activities to mark Canada's birthday.

5.5.3 Indigenous Population

The City of Woodstock has a lower proportion of Indigenous population (2.55%) compared to Ontario's average of 2.90%. The majority of those identifying as Indigenous in the City of Woodstock report a single Indigenous identity, with 94.87% of these individuals having a single Indigenous response. Of these, the majority identify as First Nations (65.32%) or Métis (32.43%). It is important to monitor these populations closely, especially with new Census data, to inform the planning of public education programs and materials that cater to the unique needs and perspectives of Indigenous communities in the City of Woodstock. Table 40 provides insights into the Indigenous population within the City of Woodstock compared to the province.

Table 40: Indigenous Population – City of Woodstock and Ontario

Indigenous Identity	Woodstock Total	Woodstock %	Ontario Total	Ontario %
Indigenous Identity	1,170	2.55	880	2.90
Single Indigenous Responses	1,110	94.87	780	95.91
First Nations	725	65.32	490	*64.37*
Métis	360	32.43	275	*34.52*
Inuk (Inuit)	25	2.25	20	*1.11*
Multiple Indigenous Responses	10	0.85	45	1.75
Indigenous Responses not specifically listed above	55	4.70	55	2.34
Non-Indigenous Identity	44,780	97.45	122,230	97.10
Total	45,950	100.00	123,110	100.00
Registered or Treaty Indian	430	0.94	295	1.23
Not a Registered or Treaty Indian	45,520	99.06	122,815	98.77

Table Source: (MPAC, 2024)

5.6 Demographic Profile – Identified Risks and Key Findings

Table 41: Demographic Profile – Identified Risks and Key Findings

Identified Risk / Key Finding	Rationale
Identified Risk	The percentage of the population aged 65 years and older in Woodstock represents 19.57% of the total population, which is higher than the province's rate of 18.55%. Additionally, 13.31% of the city's population falls between the ages of 55 and 64, gradually aging into the senior demographic of 65 years and older.
Key Finding	The youngest demographic, comprising individuals aged 14 years and under, accounts for 17.63% of the city's total population, which is higher than the province's average of 15.83%.
Key Finding	29.35% of Woodstock residents commute to other locations within the same province, a higher proportion than Ontario's rate of 23.50%

SECTION 6
HAZARD PROFILE

6.1 Hazard Identification and Risk Assessment (HIRA)

The hazard profile assessment includes analysis of the hazards within the community, including natural hazards, hazards caused by humans, and technological hazards to which a fire service may be expected to respond, and that may have a significant impact on the community. This section considers these hazards within the City of Woodstock.

A hazard is defined as a phenomenon, substance, human activity, or condition that may cause loss of life, injury or other health impacts, property damage, loss of livelihoods and services, social and economic disruption, or environmental damage. Hazards can be natural, human-caused, or technological. A Hazard Identification and Risk Assessment (HIRA) is a comprehensive process to assess risks based on potential consequences and frequencies. The outcome of the HIRA assists municipalities in prioritizing risks based on their likelihood and potential to cause an emergency. Appropriate measures can then be taken to mitigate, prepare for, and respond to the risks that pose the greatest threat to reduce future losses.

Under the Local Authority Emergency Management Regulation 203/2018, municipalities are required to have an emergency plan that must include a 'hazard and risk assessment'. The regulation does not specify which standard must be used; however, the use of a formal HIRA process is encouraged.

6.1.1 City of Woodstock Emergency Response Plan Risk Assessment

A CRA provides an opportunity to examine the results of a community emergency management program (CEMP) risk assessment and the impact that these identified hazards would have on a fire service. For the purposes of this CRA, a "fire protection services" lens will be applied to the top hazards as identified. As a component of the risk assessment and risk analysis process, the top hazards in the community were identified as a part of the risk assessment conducted by the city in 2022. Hazards were assigned a risk score and risk level ranking from extreme to very low, depending on their probability and consequence. As a result of this analysis, the following top hazards were identified:

Note: *Some hazards are grouped together based on similar risks.*

- Tornado
- Infectious Disease
- Road and Highway
- Cyber Attack
- Sabotage
- Oil/Natural Gas Emergency
- Chemical
- Electrical Energy
- Extreme Heat
- Fire Explosion

To better understand the risks of hazards as they pertain to fire protection services, the top hazards have been assessed to identify possible impacts on fire protection services. Many of the potential impacts are not unique to a jurisdiction. The results of this review are presented in Table 42.

Table 42: Impacts of Hazards on Fire Protection Services

Hazard	Possible Impact
Fire / Explosion	**Overall Impact** Threat of exposure fire to homes and businesses. Large-scale evacuations may be possible, with many people displaced. Evacuations with little notice may occur. Potential for damages and loss. Damage to the environment. Many industrial properties in the city. **Fire Services** May require mutual aid support. May not be equipped (with enough people or apparatus) to extinguish fire as it expands. May require specialized resources.
Cyber Attack	**Overall Impact** Privacy/data breach of public and/or municipality. Inability to perform administrative functions. **Fire Services** Breaches to major infrastructure could result in injury or fatalities. Breaches to databases could impede dispatch, record keeping and investigations. Breaches could result in financial loss.
Roadway / Highway Emergency	**Overall Impact** Threat to life safety. Impact to road network, downed power lines and vehicular fires. **Fire Services** Pose secondary threat to responders of fire or explosion. Delayed response in accessing scene. May require support for high number of injuries/fatalities and/or rescues.

Hazard	Possible Impact
Tornado	**Overall Impact** Above ground power lines could be impacted along with road treatments, debris clearing, damage to critical infrastructure and buildings. Increase in call volume due to damage incidents, and rescues. **Fire Services** Depending on the severity of the debris on roads and downed power lines, access to various sections of the road network could be limited to fire service response delaying emergency response times. Interruptions to communication towers could impact fire service communications.
Chemical	**Overall Impact** Serious injury or fatality. Possible secondary emergencies such as fire or explosion when chemicals mixed with air, water, or other agents. Could require small- or large-scale evacuation of homes, businesses, school etc. **Fire Services** Depending on the severity and type of release, could pose secondary risk to firefighters on-scene. Must have proper knowledge of chemical release. May not be able to access the scene until proper back-up arrives or have proper information.
Extreme Heat	**Overall Impact** Extreme temperatures could put the vulnerable population at risk, including those without access to cooling systems, the homeless, and those requiring work outside. Extreme heat can also put additional pressures on critical electrical systems **Fire Services** Depending on the severity of the extreme heat, could pose increase medical incidents due to heat emergencies, alarm calls, elevator rescues in the event of power outages. Also, extreme heat puts additional stresses on firefighters operating at large complexed incidents.

Hazard	Possible Impact
Oil / Natural Gas	**Overall Impact** Serious injury or fatality. Possible secondary emergencies such as fire or explosion when chemicals mixed with air, water, or other agents. Could require small- or large-scale evacuation of homes, businesses, school etc. **Fire Services** Depending on the severity and type of release, could pose secondary risk to firefighters on-scene. Must have proper knowledge of chemical release. May not be able to access the scene until proper back-up arrives or have proper information.
Infectious Disease	**Overall Impact** Medically vulnerable persons are at risk. Increased use of non-recyclable PPE for staff. Critical infrastructure must be maintained with planning for staffing and acquisition of critical supplies. **Fire Services** Epidemic or pandemic breakout can present significant challenges to first responders causing potential fire service workplace absenteeism, and an increased demand for medical response and supplies as was illustrated during COVID 19. Fire services currently take on a large number of medical calls. PPE was severely limited and supply chain issues for all equipment impacted operations. In many cases planned programming related to inspections and public education had to be delayed or modified.
Sabotage	**Overall Impact** Threat to life safety, may require evacuation/shelter in place of large population. **Fire Services** Requires coordination with police services. Threat to life safety of responders.

Hazard	Possible Impact
Electrical Energy	**Overall Impact** Could result disruption to critical services, including lighting, heating, communications in isolated areas or municipal wide depending on the extent of disruption. **Fire Services** Disruption to electrical grids and systems could increase responses to alarm system failures, elevator rescues, increased uses of candles for heating and lighting is an increased fire risk. Downed power lines, access to various sections of the road network could be limited to fire service response delaying emergency response times. Interruptions to communication towers could impact fire service communications.

6.2 Hazard Profile – Identified Risks and Key Findings

Table 43: Hazard Profile – Identified Risks and Key Findings

Identified Risk / Key Finding	Rationale
Key Finding	The City's 2022 Hazard Identification and Risk Assessment (HIRA) highlights 10 hazards that could impact the delivery of fire protection services . They include Tornado, Infectious Disease, Road & Highway Incidents, Cyber Attack, Sabotage, Oil or Natural Gas, Chemical, Electrical Energy, Extreme Heat and Fire Explosion.

SECTION 7
PUBLIC SAFETY RESPONSE PROFILE

7.1 Public Safety Response Agencies in the City of Woodstock

As required by **O. Reg. 378/18**, the Public Safety Response Profile considers the types of incidents responded to by other entities in the community, and those entities' responsibilities. These entities could include police, ambulance, fire, and other entities that may be tasked with or able to assist in some capacity the collective response to an emergency. The following sections consider these public safety response characteristics within the City of Woodstock.

Public safety and response agencies refer to agencies and organizations that respond to specific types of incidents within a community that provide trained personnel and resources critical to upholding public safety. Each of these entities offers specialized skill sets in support of front-line operations. The types of response services offered might include fire protection, medical attention, rescue operations, policing activities, or dangerous goods response. In addition to responding individually to certain types of incidents, these entities work closely with one another in the event of major emergencies through a structured standardized response approach to ensure effective coordination among all response agencies.

Table 44 lists the public safety response agencies who could be able to assist the city in a collective emergency response effort and may contribute to the minimization of risk within the community. Identifying the public safety response agencies within the community can help the fire service understand the agencies that may be able to assist in the response to an emergency.

Table 44: Public Safety Response Agencies

Public Safety Response Agency	Types of Incidents they Respond to	Agency Role in Incident
Woodstock Police Services	• Federal provincial and municipal law infractions • Traffic calls, emergency calls, crowd control, public assistance • Major crimes i.e., homicide, kidnapping, organized crime • Investigations • Complaints	• Enforce Criminal Code • Enforce Municipal bylaws • Investigating cross-jurisdictional and major crimes • Offender transport
Ontario Provincial Police (OPP)	• Traffic incidents on Provincial Highways • Nuclear response incidents (large scale) • Assistance to Durham Regional Police	• Enforce Criminal Code • Enforce Highway Traffic Act • Traffic control
Municipal Law Enforcement Officers	• Violations of city bylaws	• Enforcing traffic infractions on city roads • Providing information on legislation and city bylaws to industry, as well as the general public • Enforce city bylaws • Liaise with regional law enforcement
Office of the Fire Marshal	• Fire	• Assistance with managing fire and obtaining resources beyond capability of city
Oxford County Paramedic Services	• Advanced EMT pre-hospital care • Mass casualty incidents • Evacuation of health facilities (hospital, nursing homes etc.) • Disease related emergencies	• Ensuring provision of paramedic services at the site of the emergency • Ensuring continuity of paramedic services coverage is maintained throughout the remainder of the community/city • Liaise with the Medical Officer of Health to help facilitate medical services at the hospital

Public Safety Response Agency	Types of Incidents they Respond to	Agency Role in Incident
Medical Officer of Health	• Communicable Diseases • Health Inspection Services • Advice on Medical Services • Public Health Advisory • Liaise with long term care facilities, hospitals, retirement homes, and other vulnerable populations as required	• Provide information and instructions to the population on matters concerning public health • Protect the health of the community from inherent health threats by enforcement of the applicable legislation. • Continue delivery of established programs to ensure continuity of care and general health protection
Victim Services of Oxford County	• Serious assault • Domestic violence • Sexual assault • Stalking	• Immediate crisis response • Vitim assistance • Victim support and needs assessment
CANUTEC	• Hazardous spills/emissions	• Product information • Safe handling information • emergency actions
Ministry of Natural Resources	• Spills • Environmental disasters	• Provide personnel and equipment for cleanup and remediation
Ministry of Environment	• Spills • Environmental disasters	• Provide personnel and equipment for cleanup and remediation
Ministry of Labour, Immigration, Training and Skill Development	• Industrial accidents • Workplace critical injuries and deaths	• Investigate worker injury or death
Ministry of Natural Resources and Forestry	• Large wildland fires	• Assis in mitigating and combating wildland fires
Ministry of Transportation	• Major/large vehicle incidents on King's Highways	• Traffic control • Assist with repair and cleanup

Public Safety Response Agency	Types of Incidents they Respond to	Agency Role in Incident
Emergency Management Ontario	• Large-scale emergencies requiring declaration of state of local emergency	• Provincial level support • Communication
CP Police Service	• Rail emergencies (on and off board) • Rail security incidents on and off board • Promote rail safety • Protect infrastructure • Enforce Criminal Code	• Oversee response to all rail emergencies. • Liaise with and support municipal or provincial fire and emergency services as needed for large incidents
CN Police Constables	• Rail emergencies (on and off board) • Rail security incidents on and off board • Enforce Criminal Code • Safety awareness	• Oversee response to all rail emergencies. • Liaise with and support municipal or provincial fire and emergency services as needed for large incidents.
Oxford County Human Services	• Large evacuation events • Events with displaced residents	• Assist with temporary housing for displaced occupants. • Provide social services to affected occupants
Red Cross – Woodstock Branch and Disaster Services	• Large evacuation events • Events with displaced residents	• Emergency Lodging • Reception and information • Emergency food • Emergency clothing • Family reunification

7.1.1 Fire Protection Agreements and Plans

Large emergency events can quickly overwhelm the response capacity of most community fire departments in Ontario. As a result, mutual aid and automatic aid agreements are a necessary component in adding response capacity for these low frequencies but potentially high or extreme consequence events.

The City of Woodstock is part of the Oxford County Mutual Aid Plan, as defined under the FPPA, with oversight through the OFM. This plan allows for assistance to be provided to or received from other fire services in the region. The plan defines the various levels to be provided.

Formal Automatic aid agreements are in place for receiving tanker operations with the townships of Norwich, East Zorra-Tavistock, and a formal fire protection agreement with South Oxford for receiving tanker operations.

The principal purpose for entering into these agreements and plans is to promote and ensure that adequate and coordinated resources are made available when requested from, or by a neighbouring municipality to minimize the loss of human life and property and damage to the environment in the event of an emergency that requires such additional resources.

All inter-municipal agreements should be reviewed regularly and adjusted as required. This provides for the updating and clarification of agreements and consideration of adjustments. It may also lead to discussions regarding localized fire service response agreements and considerations about whether automatic aid in defined circumstances might be of additional value.

SECTION 8
COMMUNITY SERVICES PROFILE

As referenced in **O. Reg. 378/18**, the community service profile assessment includes analysis of the types of services provided by other entities in the community, and those entities' service capabilities. This includes the presence or absence and potential abilities of other agencies, organizations, or associations to provide services that may assist in mitigating the impacts of emergencies to which the fire department responds. The following sections consider these community service characteristics within the City of Woodstock.

8.1 Community Services

Fires and other emergency events can have devastating effects on a community and at times can overwhelm public safety and security agencies' capacity to respond. In an emergency event, community-based agencies, organizations, and associations can provide surge capacity to the response and recovery efforts of first responders and a useful resource to call upon if integrated into the emergency management framework early on. These types of affiliations can contribute a variety of capabilities essential to response and recovery efforts, including support in the areas of communications, health care, logistics, shelter, food and water supply, emergency clothing, and more specialized skill sets. Table 45 lists the community agencies and non-government organizations (NGOs) available to the City of Woodstock.

Table 45: Community Service Agencies

Community Service Agency	Type of Assistance Provided
Local School Boards: Thames Valley District School Board & London District Catholic School Board	The 2021 Census data indicates that children aged 14 and under, represent 17.62% of the city's total population. The proportion of children in Woodstock should be considered as an opportunity for public education. These numbers support the development of enhanced public education programming that targets children/youth of all ages. Partnering with school boards and other agencies that work with children can provide opportunity for fire and life safety education.
Salvation Army	The Salvation Army can provide both immediate and long-term recovery assistance in cooperation with Fire and Police Services. The Salvation Army also provides information and referral to other agencies, camps, disaster services and counselling. The Salvation Army also provide food bank services and support to individuals and families in need.
Operation Sharing	Families and individuals in need of emergency food assistance receive a specially designed food card in pre-determined denominations as an alternative or supplement to the food bank. Individuals can use these cards to do their grocery shopping at any of the participating grocery stores in Woodstock.
Oxford County Paramedic Services	Provides basic and advance medical care for first aid emergencies at public events. They are also able to provide volunteer support in the event of emergency situations such natural or human disasters.
Oxford County Housing	Short-term accommodations for those who are homeless or experiencing a crisis. They also provide support and temporary accommodations to bridge the gap between homelessness to permanent housing as well as permanent, affordable housing that provides support services to help people live more stable lives.
Victim Services of Oxford County	Provides immediate on-site crisis, trauma, safety & support services to victims of crime and sudden tragedies.
Red Cross – Woodstock Branch	Provides health and fitness branches, camps, childcare centres, community programs and newcomer services across the region.

Community Service Agency	Type of Assistance Provided
Southwestern Public Health	Respond to public health emergencies; promote healthy lifestyles; help prevent injuries, illness, and disease; and promote positive change and social conditions that improve health.
St. John's Ambulance	St. John's Ambulance offer first aid and CPR services as well as a base of volunteers capable of providing first aid.
Canadian Mental Health Association Oxford (CMHA)	CMHA Oxford provides addiction and mental health counselling services. These services can be accessed by persons affected by an emergency.
YMCA of Southwestern Ontario	Provides a variety of employment services, newcomer services as well as youth programming.
Big Brothers & Sisters of Oxford County	Provides youth 6 to 16 years old with a role model to talk to and share the experiences of growing up with.
Oxford County Community Health Centre	Provides access to adult day programs, assisted living/housing, mental health programs and access to fresh food.
Local community faith-based organizations	Public fire safety messaging does not always reach community's most vulnerable populations. Partnering with local faith-based organizations can provide WFD with the opportunity to improve its public education program as a method of information sharing to a wider audience within the city. This type of opportunity could involve distributing printed materials with fire safety messaging and smoke alarm installation information among the congregation, or faith-based leaders may allow representatives from WFD to address congregations at faith-based events with fire safety messaging in person. These organizations may also be able to identify residents within the community who are at significant risk of fire danger due to substandard housing or hoarding.

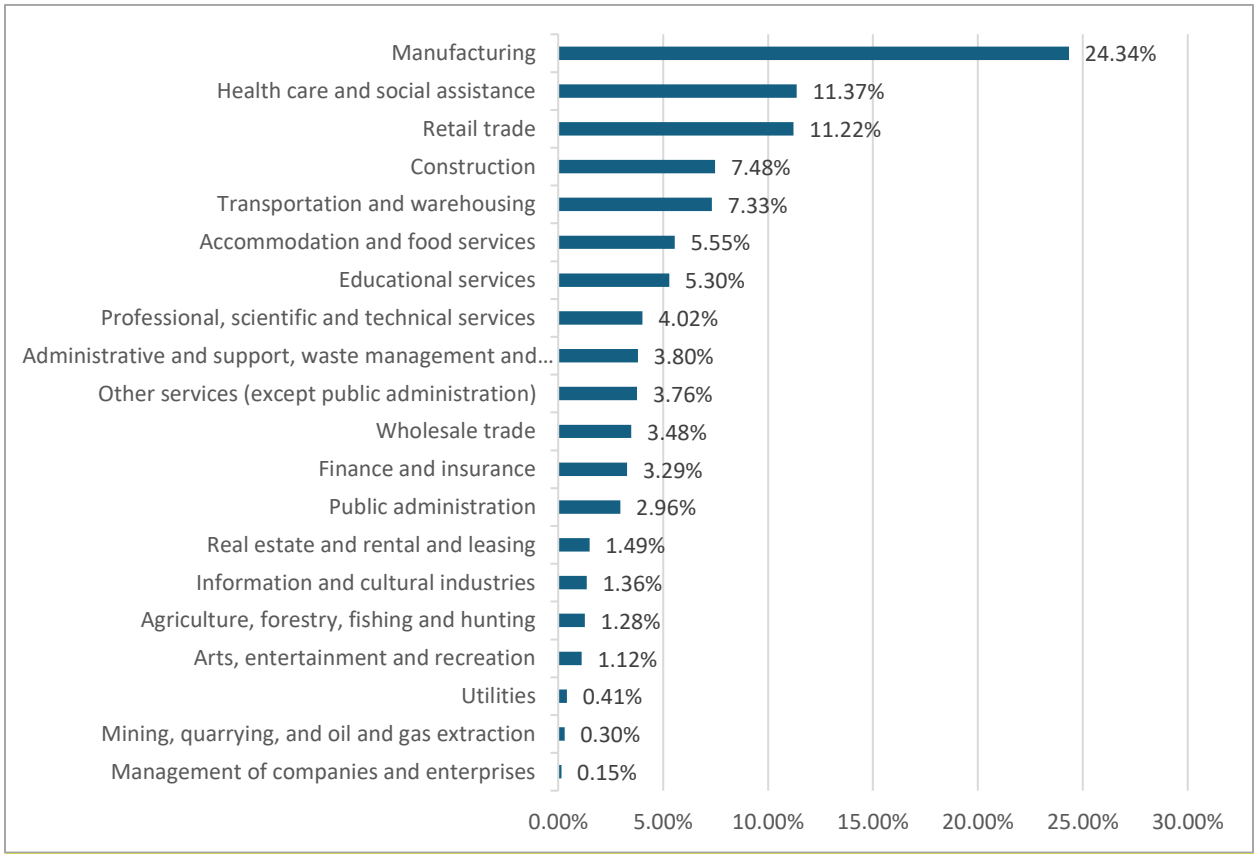
SECTION 9
ECONOMIC PROFILE

As referenced in **O. Reg. 378/18**, the economic profile assessment includes analysis of the economic sectors affecting the community that are critical to its financial sustainability. This involves economic drivers in the community that have a significant influence on the ability of the community to provide or maintain service levels. The following sections consider these economic characteristics within the City of Woodstock.

9.1 Economic Sectors and Employers in the City of Woodstock

The top industries that contribute to the economic base of the city are summarized in Figure 9. According to the Statistics Canada 2021 Census, Manufacturing, Health Care and Social Assistance, Retail Trade and Construction are the top contributing industries to Woodstock's economic base.

Figure 9: City of Woodstock Top Industries



Certain industries, employers and events contribute to the financial sustainability and economic vitality of a community. A fire or other emergency at key sectors and employment facilities within a community could have significant impacts on the local economy and employment.

Woodstock's 160+ businesses have access to a large skilled Western Ontario-wide labour force. The city's top employers are summarized in Table 46.

Table 46: Major Employers in the City of Woodstock

Company	Service/Product	Address
Toyota Motor Manufacturing	Automobiles	1717 Dundas St
Contrans Group Inc	Modular Components, package, and trays	646 Athlone Ave
Toyota Boshoku Canada	Automotive seats, door panels	230 Universal Rd
Transfreight Integrated Logistics	Logistics for Toyota motor manufacturing	715032 Oxford Rd 4
Sysco Southwestern Ontario	Food Product Distribution	1515 Commercial Way
Great Northern Insulation	Insulation Contractor	935 Keyes Dr
Agropur, Bright Cheese	Cheese, condiments	478 Industrial Ave
Tigercat Industries	Heavy Steel Fabrication	1403 Dundas St
Thames Valley District School Board	Education	Various Schools
Woodstock Hospital	Health Services	310 Juliana Dr
County of Oxford	Regional Government	21 Reeve St
City of Woodstock	Municipal Government	500 Dundas St
Woodingford Lodge	Long Term Care	300 Juliana Dr
Fanshawe College	Education	369 Finkle St

Woodstock has large employers in both the private and public sectors, several of them being in the manufacturing industry. Certain industrial operations may have increased fuel loads and conduct higher risk activities. Proactive inspections should target these facilities to ensure compliance with codes, maintenance, and emergency planning requirements.

9.2 Economic Profile – Identified Risks and Key Findings

Table 47: Economic Profile – Identified Risks and Key Findings

Identified Risk / Key Finding	Rationale
Key Finding	There are 15 major employers identified that significantly contribute to the economic vitality of the community

SECTION 10
PAST LOSS & EVENT HISTORY PROFILE

As referenced in **O. Reg. 378/18**, the past loss and event history profile assessment includes analysis of the community's past emergency response experience, including an analysis of the number and types of emergency responses, injuries, deaths and dollar losses, and a comparison of the community's fire loss statistics with provincial fire loss statistics. Evaluation of previous response data will inform decisions on fire protection services delivery including public fire safety education and inspection programs. The following sections consider these past loss and event history characteristics within the City of Woodstock.

10.1 Past Loss

Analysis of historical data provides valuable insight into understanding the specific trends within a community. Assessing the key factors of life safety risk and fire risk in relation to provincial statistics provides a foundation for evaluating where specific programs or services may be necessary. The analysis within this section is based on the OFM's Standard Incident Reporting for the period of January 1st, 2019, to December 31st, 2023

Total Fire Loss

The analysis of total fire loss in the City of Woodstock over the five-year period from 2019 to 2023, Table 48 highlights three primary types of fires: structure fires, outdoor fires, and vehicle fires, totaling $9,956,631 in property loss. On average, the City of Woodstock experienced 24.80 fires per year and incurred approximately $1,719,596 in property loss annually.

Table 48: Total Fire Loss – City of Woodstock

Year	Structure Fires	Loss ($)	Outdoor Fires	Outdoor Loss	Vehicle Fires	Vehicle Loss	Total Fires	Total Loss
2019	29	$328,176	4	$9,151	5	$65,100	38	$402,427
2020	26	$2,330,202	1	$6,000	6	$107,000	33	$2,443,202
2021	17	$1,215,450	0	$0	5	$209,400	22	$1,424,850
2022	23	$2,892,600	3	$44,000	8	$520,000	34	$3,456,600
2023	29	$1,831,552	3	$122,000	5	$276,000	37	$2,229,552
Total	124	$8,597,980	11	$160,251	29	$3,121,500	164	$9,956,631
% of All Fires	75.61%	86.35%	6.71%	1.61%	17.68%	31.35%	100.00%	100.00%
Average	24.80	$1,719,596	2.20	$36,230	5.80	$235,500	32.80	$1,991,326

Table Source: OFM 2019-2023 SIR Data for Woodstock

Table 49 represents a comparison of average structure fires and property loss between the City of Woodstock and the province of Ontario for the years 2019 to 2023. Over this period, Woodstock experienced an average of 24.80 structure fires annually, resulting in an average property loss of $1,719,596 per year. These fires accounted for 15.12% of all fires in the city and 17.27% of the total property loss. In comparison, Ontario reported an average of 7,061 structure fires annually with an average loss of $1,048,450,017, representing 12.86% of all fires in the province and 17.90% of the total property loss.

Table 49: Structure Fires and Property Loss – City of Woodstock and Ontario

Year	Woodstock Structure Fires	Woodstock Structure Loss	% of All Fires	% of All Loss	Ontario Structure Fires	Ontario Structure Loss	% of All Fires	% of All Loss
2019	29	$328,176	17.68%	3.30%	6,715	$860,432,756	12.23%	14.69%
2020	26	$2,330,202	15.85%	23.40%	6,842	$790,698,587	12.46%	13.50%
2021	17	$1,215,450	10.37%	12.21%	7,081	$858,108,388	12.90%	14.65%
2022	23	$2,892,600	14.02%	29.05%	7,482	$1,161,882,704	13.63%	19.83%
2023	29	$1,831,552	17.68%	18.40%	7,183	$1,571,127,652	13.09%	26.82%
Total	124	$7,302,078	75.61%	85.53	35,303	$5,242,250,087	64.31%	89.49%
Total, fires with Loss	164	$8,597,980	100.00%	100.00%	54,894	$5,858,152,673	100.00%	100.00%
Average	24.80	$1,719,596	15.12%	17.27%	7,061	$1,048,450,017	12.86%	17.90%

Table Source: OFM SIR data for City of Woodstock

10.1.1 Fires by Occupancy Type

This section examines structure fires occurring from January 1st, 2019, to December 31st, 2023, categorized by occupancy type, utilizing data from the OFM's Standard Incident Reporting. Over this period, the City of Woodstock experienced a total of 124 structure fires. Notably, 67.74% (84) of these fires occurred in Group C-Residential Occupancies, contributing to 71.68% of the total fire loss. Compared to the province, Woodstock exhibited a 3.94% lower incidence of fires in Group C-Residential Occupancies and a 6.83% higher share of structure fire loss.

The second most substantial source of property loss was Group F – Industrial occupancies, representing 11.29% of structure fires and 8.92% of total structure fire loss during this period, with a 3.99% higher incidence than the province for this occupancy type but a 7.29% lower structure fire loss than the province for this property type.

The City of Woodstock had a 4.69% higher rate of fires in Group A assembly occupancies and a 4.29% higher fire loss than that of the province.

Table 50: Fires by Major Occupancy Type – 2019-2023

Group	Occupancy Classification	# of Fires	Woodstock % of Structure Fires	Woodstock Structure Fire Loss	Woodstock % of Structure Fire Loss	Ontario % of Structure Fires	Ontario % Structure Fire Loss
A	Assembly	10	8.06%	$920,750	10.71%	3.38%	3.77%
B	Care & Detention	1	0.81%	$82,000	0.95%	1.42%	0.45%
C	Residential	84	67.74%	$6,163,130	71.68%	73.35%	64.85%
D	Business & Personal Services	7	5.65%	$283,500	3.30%	2.70%	2.22%
E	Mercantile	5	4.03%	$366,500	4.26%	3.46%	4.06%
F	Industrial	14	11.29%	$766,600	8.92%	7.30%	16.21%
Other	Not Classified in OBC	0	0.00%	$0	0.00%	5.83%	1.05%
Farm	Classified in the OBC	3	2.42%	$15,500	0.18%	2.57%	7.40%
	Total	124	100.00%	$8,597,980	100.00%	100.00%	100.00%

Table Source: OFM SIR data for City of Woodstock[15]

[15] *Ibid*

10.1.2 Civilian Fatalities and Injuries

As shown in Table 51, according to data from the OFM Standard Incident Reporting, spanning from January 1st, 2019, to December 31st, 2023, there were no reported injuries and 1 fatality within the City of Woodstock. These numbers are considered low when compared to the total identified by the provincial statistics.

Table 51: Civilian Fire Fatalities and Injuries by OBC Major Occupancy Classification – City of Woodstock and Ontario

Group	Occupancy Classification	Woodstock Injuries	Woodstock Injuries (%)	Woodstock Fatalities	Woodstock Fatalities (%)	Ontario Injuries	Ontario Injuries (%)	Ontario Fatalities	Ontario Fatalities (%)
A	Assembly	0	0.00%	0	0.00%	17	0.70%	3	0.61%
B	Care & Detention	0	0.00%	0	0.00%	48	1.98%	6	1.22%
C	Residential	0	0.00%	1	100.00%	2186	90.26%	464	94.31%
D	Business & Personal Services	0	0.00%	0	0.00%	35	1.45%	1	0.20%
E	Mercantile	0	0.00%	0	0.00%	24	0.99%	1	0.20%
F	Industrial	0	0.00%	0	0.00%	67	2.77%	13	2.64%
Other	Not Classified in OBC	0	0.00%	0	0.00%	32	1.32%	4	0.81%
Farm	Classified in the NBC	0	0.00%	0	0.00%	13	0.54%	0	0.00%
	Total	0	0.00%	1	100.00%	2422	100.00%	492	100.00%

Table Source: OFM SIR data for City of Woodstock[16]

[16] *Ibid*

10.1.3 Reported Fire Cause

The NFPA defines fire cause as “the circumstances, conditions, or agencies that bring together a fuel, ignition source, and oxidizer (such as air or oxygen) resulting in a fire or a combustion explosion.” Assessing the possible cause of the fires reported is an important factor in identifying potential trends or areas that may be considered for introducing additional public education or fire prevention initiatives. Within OFM fire loss reporting, there are five categories of cause used to classify the cause of a fire. These include intentional, unintentional, other, undetermined, and unknown. Table 52 presents the reported fire causes for the city compared to the province over the five-year period from January 1st, 2019, to December 31st, 2023.

The analysis of fire causes in the City of Woodstock, as detailed in Table 52, reveals various factors contributing to fires over the period examined. Almost 22% of fires were found to be undetermined. Determining the cause of fires can assist fire services in developing public education programs to reduce or prevent future incidents. It could also help identify trends that may indicate a need for targeted enforcement. The "intentional" category includes fires started for a specific reason, typically classified as arson, acts of vandalism, or for personal gain through insurance claims. According to the data, the city reported 13 arson fires (3.83% higher than the Province) and 7 fires related directly to vandalism (4.06% higher than the province) during this five-year period. This indicates that the city has a higher rate of intentional fires compared to the province.

The "unintentional" category represents common causes of fires, including human behavioral causes (e.g., misuse of ignition sources) and equipment failures (e.g., mechanical failure). Unintentional fire causes represented 61.29% of all reported fires in the city during this period, compared to 64.41% for the province. The leading causes of unintentional fires in the city were the misuse of ignition sources (29.03%) and mechanical/electrical failures (9.68%).

Table 52: Reported Fire Cause – City of Woodstock and Ontario – 2019-2023

Nature	Fire Cause	Woodstock # of Fires	Woodstock % of Fires	Ontario # of Fires	Ontario % of Fires
Intentional	Arson	13	10.48%	2,348	6.65%
	Vandalism	7	5.65%	561	1.59%
	Other	0	0.00%	41	0.12%
Unintentional	Design/Construction/ Maintenance Deficiency	6	4.84%	2,127	6.02%
	Mechanical/Electrical Failure	12	9.68%	5,164	14.63%
	Misuse of Ignition Source	36	29.03%	9,511	26.94%
	Other Unintentional	12	9.68%	2,609	7.39%
	Vehicle Collision	0	0.00%	35	0.10%
	Children Playing	2	1.61%	141	0.40%
	Undetermined	8	6.45%	3,151	8.93%
Other	Other	1	0.81%	1,967	5.57%
Undetermined	Undetermined	27	21.77%	7,520	21.30%
Unknown	Unknown, not reported	0	0.00%	128	0.36%
	Total	124	100.00%	35,303	100.00%

Table Source: OFM SIR data for City of Woodstock[17]

10.1.4 Ignition Source

According to the 2019 NFPA Glossary of Terms, ignition source is defined as "any item or substance capable of an energy release of type and magnitude sufficient to ignite any flammable mixture of gases or vapors that could occur at the site or onboard the vehicle." Table 53 provides fire loss by source of ignition for the city and the province. Open flame tools/smokers' articles represent the highest number of reported ignition source representing 29.84% of all fire causes. This is 16.11% higher than that of the Province.

[17] *OFM SIR Data for the City of Woodstock, 2019-2023*

Miscellaneous sources of ignition (not falling within the defined list of causes) represent the second most common category (19 fires) and account for 15.32% of all fire incidents. This is almost twice as many of the provincial average. The third highest ignition source identified was cooking equipment (17 fires) representing 13.71% of all fire incidents.

Incidents in the city where the ignition source was "other electrical/mechanical" is 4.48% higher than that of the province. The balance of the source of ignition was fairly evenly distributed across a number of classifications which all fall within or below the provincial averages.

Table 53: Source of Ignition – City of Woodstock and Ontario – 2019-2023

Reported Ignition Source	Woodstock # of Fires	Woodstock % of Fires	Ontario # of Fires	Ontario % of Fires
Appliances	4	3.23%	1,481	4.20%
Cooking Equipment	17	13.71%	5,315	15.06%
Electrical Distribution Equipment	9	7.26%	2,836	8.03%
Heating Equipment	5	4.03%	2,425	6.87%
Lighting Equipment	3	2.42%	929	2.63%
Open Flame tools/ Smokers Articles	37	29.84%	4,846	13.73%
Other Electrical/Mechanical	12	9.68%	1,835	5.20%
Processing Equipment	1	0.81%	393	1.11%
Miscellaneous	19	15.32%	3,500	9.91%
Exposure	2	1.61%	1,760	4.99%
Undetermined	15	12.10%	9,841	27.88%
Unknown/Not Reported	0	0.00%	142	0.40%
Total	124	100.00%	35,303	100.00%

Table Source: OFM SIR data for City of Woodstock[18]

[18] *OFM SIR Data for the City of Woodstock, 2019-2023*

10.1.5 Smoke Alarm Status

In the Province of Ontario, smoke alarms serve as crucial safety measures, mandated on every level of residential dwellings to act as the first line of defense against fires. Therefore, smoke alarm programs and compliance initiatives are integral components of public education and fire prevention efforts led by municipal fire services. Data regarding smoke alarm status during fire incidents is collected and reported by municipalities to the province. Table 54 shows that over a five-year period from January 1st, 2019, to December 31st, 2023, in Group C - Residential occupancies, the City of Woodstock reported that in 39.29% of fires responded to, there was no smoke alarm present, or a smoke alarm was present and did not operate. This is 9.72% higher than the provincial average. Standard Incident Reporting (SIR) from the OFM[19] indicates 71.68% of structure fire loss was in Group C- Residential occupancies.

Table 54: Smoke Alarm Presence and Operation on the Floor of Fire Origin – City of Woodstock and Ontario– 2019-2023

	Woodstock							Ontario	
Smoke Alarm Status (on floor of origin)	2019	2020	2021	2022	2023	Total	%	Ontario Total	Ontario %
No Smoke Alarm Present	6	8	3	2	5	24	28.57%	4,301	17.39%
Smoke Alarm Present & Operated	7	3	6	7	6	29	34.52%	11,010	44.52%
Smoke Alarm Present & did not operate	3	2	0	1	3	9	10.71%	3,012	12.18%
Smoke Alarm Present, Operation undetermined	3	0	0	1	0	4	4.76%	1,976	7.99%
Smoke Alarm Presence Undetermined	4	6	0	4	4	18	21.43%	4,362	17.64%
Unknown, not reported	0	0	0	0	0	0	0.00%	70	0.28%
Total	23	19	9	15	18	84	100.00%	24,731	100.00%

[19] *(SIR - Municipal Fires Overview 2018-2022, 2024)*

There were occurrences where the status or operation of the smoke alarms could not be conclusively determined. In the City of Woodstock, this accounted for 26.19% of the occurrences. The reasons for the undetermined status could vary, including factors such as the extent of fire damage obscuring the evidence of smoke alarm presence or functionality, lack of proper documentation, or limitations in investigative procedures. Efforts to enhance data collection and investigation methods could help reduce the number of undetermined cases, providing valuable insights for fire prevention and safety initiatives.

10.2 Event History

Event history seeks to apply WFD historic emergency call data to develop an understanding of community risks. The OFM provided the data used in this analysis for all historical calls for the five-year period from January 1st, 2019, to December 31st, 2023. This section provides a statistical assessment of historic emergency call volumes for the city. The analysis included within this section also provides a detailed breakdown of calls by OFM response type. Data used in the analysis of call volume by type was sourced from the OFM's Standard Incident Reporting because call volume by type is compared to the province. The volume and frequency of historic calls informs the understanding of response probability. The types of calls inform the potential consequences of WFD responses and calls for service. The combined consideration of these elements provides an understanding of community risk, based on past calls for service.

10.2.1 Emergency Call Volume

This section illustrates the historical emergency call volume by year, month, day of week, and time of day for all types of incidents responded to by WFD for the time from January 1st, 2019, to December 31st, 2023.

10.2.1.1 Annual Call Volume – All Incident Types

The analysis of annual emergency call volume can be beneficial in understanding evolving trends or changes in emergency response demand. A summary of the total number of emergency calls for the period from January 1st, 2019, to December 31st, 2023, is shown in Figure 10. This analysis identifies an increase in the total emergency call volume within the city over this period from 1,484 calls in 2019 to 2,049 calls in 2023. This represents a total increase of 38.07% over this five-year period with an average of 1502 calls per year. There was an 37.51% increase in the call volume from 2022 to 2023.

Figure 10: Annual Call Volume – All Incidents January 1st, 2019, to December 31st, 2023

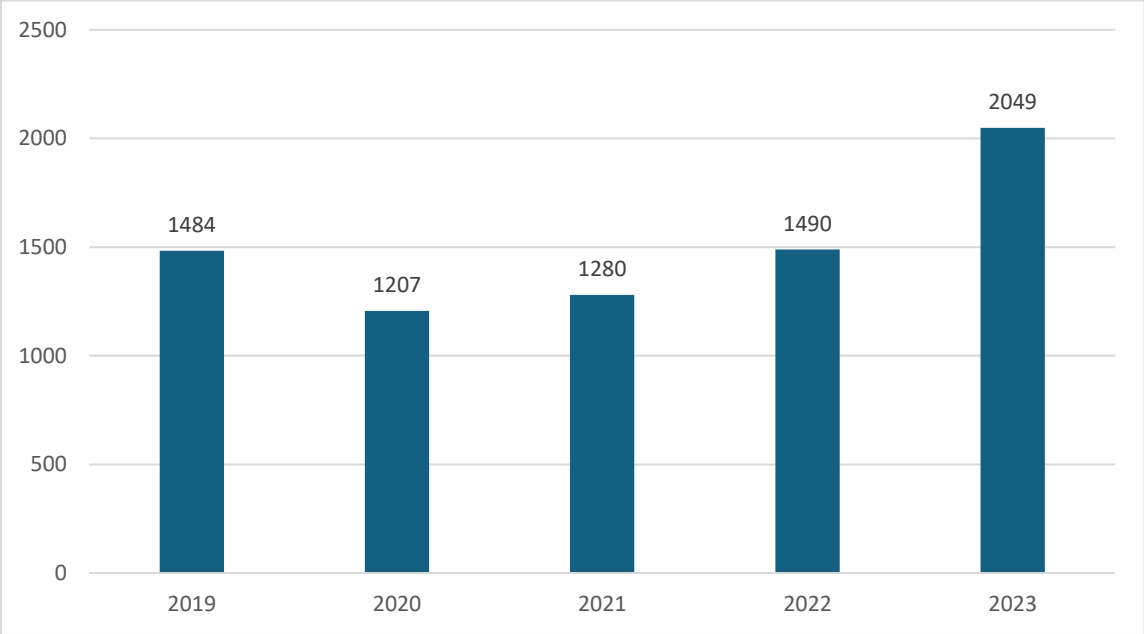


Figure Source: OFM SIR data for the City of Woodstock[20]

10.2.1.2 Monthly Emergency Call Volume – All Incident Types

[20] *OFM SIR Data, 2018-2022*

Figure 11 illustrates that call volumes remain relatively consistent throughout the year, with the highest occurrences typically observed from May to September. This increase aligns with the expected influx of tourists and heightened travel activity through the city during these months.

Figure 11: Total Call Volume by Month – All Incidents January 1st, 2019, to December 31st, 2023

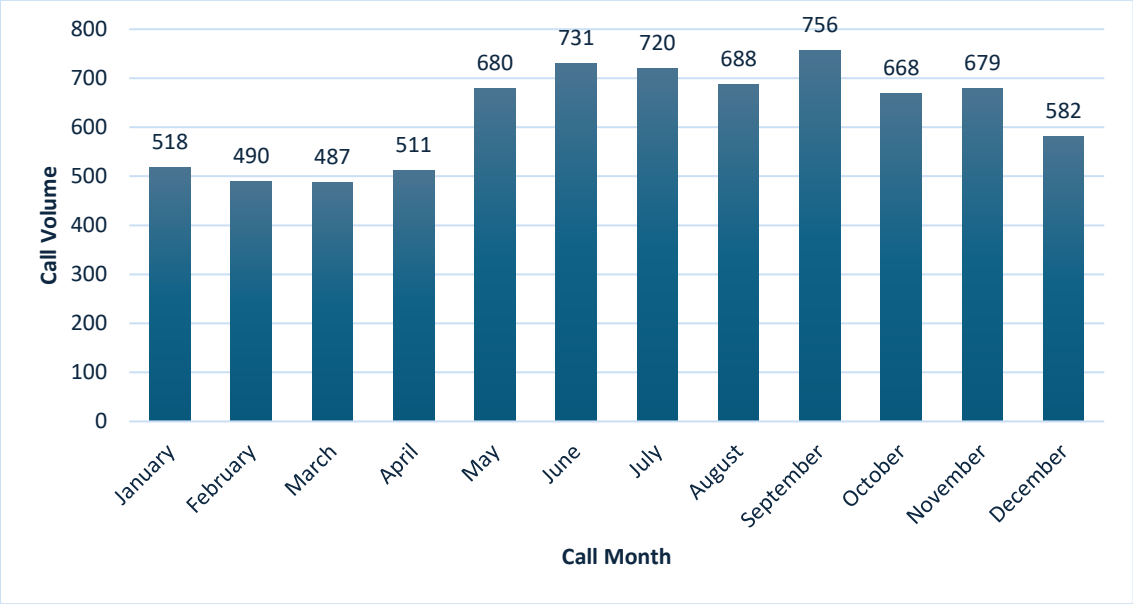


Figure Source: OFM SIR data for the City of Woodstock[21]

10.2.1.3 Daily Emergency Call Volume – All Incident Types

Figure 12 presents an analysis of the call volume by day of the week. The data shows that incidents generally occurred with similar frequency, with a noticeable increase from Friday to Saturday. This trend is expected, as more of the population engages in recreational activities and there is typically an increase in traffic volume throughout the city during these days.

[21] *OFM SIR Data, 2018-2022*

Figure 12: Total Call Volume by Day – All Incidents January 1st, 2019, to December 31st, 2023

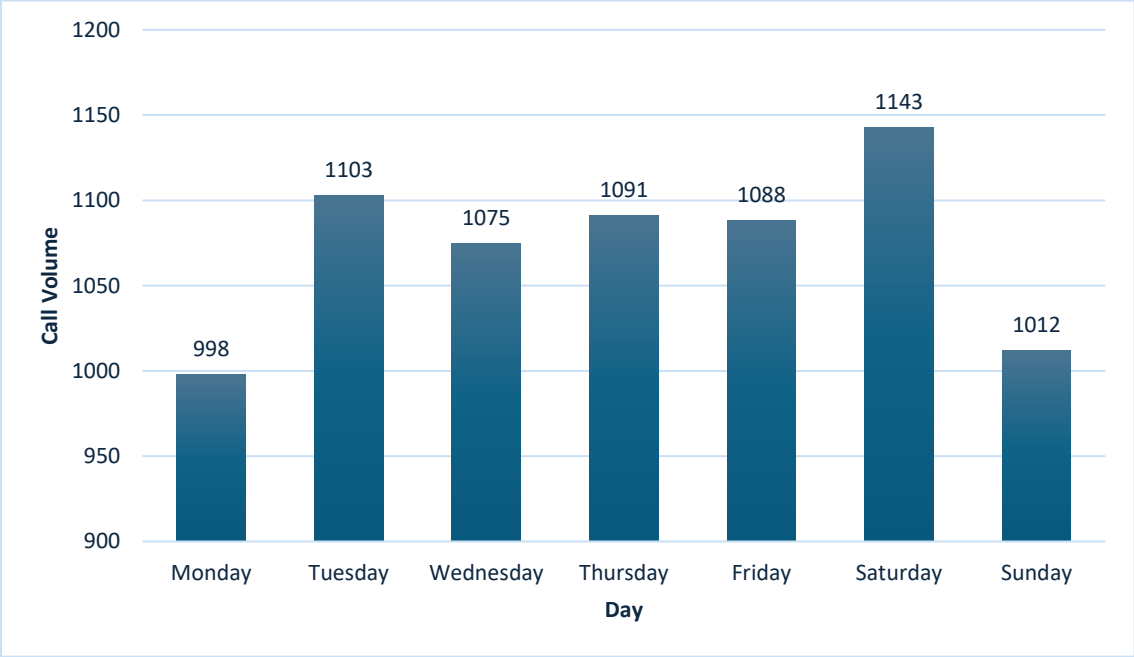


Figure Source: OFM SIR data for the City of Woodstock[22]

10.2.1.4 Hourly Emergency Call Volume – All Incident Types

For the period from January 1st, 2019, to December 31st, 2023, call volume typically begins to increase between 9:00 AM and 11:59 AM, reaching its peak between 3:00 PM and 5:59 PM (see Figure 13). The distribution remains relatively steady throughout these hours. Conversely, the lowest percentage of emergency call volume typically occurs between 3:00 AM and 5:59 AM, which is expected as most of the population is asleep during these hours.

[22] *OFM SIR Data, 2018-2022*

Figure 13: Total Call Volume by Time of Day – All Incidents January 1st, 2019, to December 31st, 2023

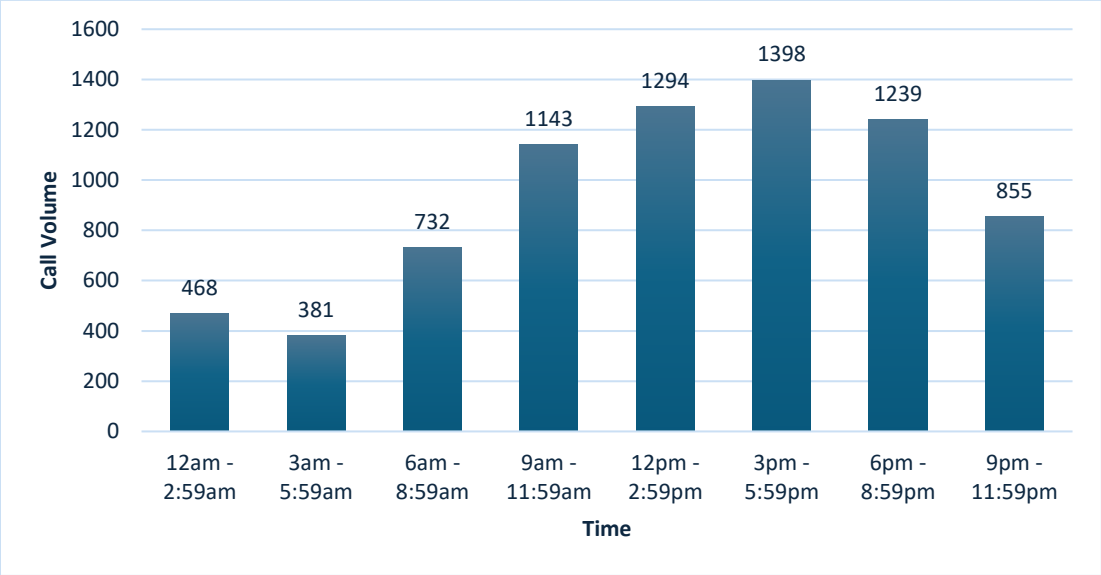


Figure Source: OFM SIR data for the City of Woodstock[23]

10.2.1.5 Call Type – All Incident Types

This section analyzes the emergency call volume for the period from January 1st, 2018, to December 31st, 2023. The data reveals several key trends in the types of incidents that the department responded to over this five-year period.

Table 55 illustrates that during this period, 35.36% of the total emergency calls were Medical/Resuscitator calls, making it the most common type of incident

The second highest category, representing 17.99% of the total calls, was rescue incidents. These calls are primarily attributed to motor vehicle collisions, which require substantial resources and coordination.

False fire calls are the third highest category of incidents responded to, representing 17.96% of all incidents.

Vehicle Collisions are 89.00% of all rescue incidents with 3.64% of those resulting in extrication.

[23] *OFM SIR Data, 2018-2022*

The "Other responses" category, which accounts for 4.16% of the total emergency call volume, encompasses a broad range of non-emergency activities that the department is involved in. This includes various forms of assistance, such as aiding other agencies, police, or fire departments through mutual aid or fire protection agreements. It also covers situations where the response was either canceled enroute, the incident was not found upon arrival, or no further assistance was required. Additionally, this category includes public service activities and special cases like responding to illegal grow operations without fire involvement.

Table 56 provides a detailed breakdown of these calls, illustrating the department's workload distribution across different types of emergencies and non-emergencies during this period.

Table 55: Total Number of Incidents – Summary - January 1st, 2018, to December 31st, 2023.

Incident Subcategory	2018	2019	2020	2021	2022	2023	Total	Total %
Property fires/explosions	42	61	47	57	78	39	324	3.62%
Burning (controlled)	59	52	116	86	96	147	556	6.21%
Overpressure rupture/explosion (no fire)	0	1	2	2	0	5	10	0.11%
Pre-fire conditions/no fire	52	57	53	54	50	69	335	3.74%
False fire calls	277	256	242	254	286	292	1607	17.96%
CO false calls	125	108	83	83	75	69	543	6.07%
Public Hazard	64	67	78	73	77	58	417	4.66%
Rescue	232	332	244	224	295	283	1610	17.99%
Medical/Resuscitator	538	492	292	385	453	1004	3164	35.36%
Other response	64	57	52	53	79	67	372	4.16%
Total	1,454	1,484	1,207	1,280	1,490	2033	8948	100.00%

Table Source: OFM SIR data for City of Woodstock, 2023 Data – City of Woodstock Fire

Table 56: Total *Number of Incidents – Breakdown - January 1st, 2018 to December 31st, 2023*

Call Type	2018	2019	2020	2021	2022	2023	Total	Total %
A. Structure Fire	18	29	26	17	23	29	113	1.26%
B. Other Fire	1	4	1	0	3	3	9	0.10%
C. Vehicle Fire	6	5	6	5	8	5	30	0.34%
D. No Loss Fire	0	1	0	3	1	2	5	0.06%
E. No Loss Fire (Excluded)	17	22	14	32	43	35	163	1.82%
F. Non-Fire Call	1,412	1,423	1,160	1,223	1,412	1,994	8624	96.38%
Total	1,454	1,484	1,207	1,280	1,490	2033	8948	100.00%
Non-Fire Call Breakdown								
Burning Controlled	**59**	**52**	**116**	**38**	**101**	**147**	**513**	6.16%
Authorized controlled burning complaint	11	8	25	19	5	15	83	1.00%
Open Air Burning/unauthorized controlled burning	48	44	91	19	91	122	415	4.98%
CO False Fire Calls	**125**	**108**	**83**	**83**	**75**	**69**	**543**	6.52%
CO false alarm - equipment malfunction	80	58	44	51	43	44	320	3.84%
CO false alarm - perceived emergency	45	50	39	32	32	25	223	2.68%
False Fire Calls	**277**	**256**	**242**	**254**	**286**	**292**	**1607**	**19.30%**
Alarm System Equipment Accidental Activation	56	53	52	74	62	58	355	4.26%
Alarm System Equipment Malfunction	111	108	87	83	124	117	630	7.57%
Human - Accidental	30	29	22	31	33	37	182	2.19%
Human - Malicious	14	12	13	7	15	17	78	0.94%
Human - Perceived Emergency	52	33	46	34	31	43	239	2.87%
Other False Fire Call	14	21	22	25	21	20	123	1.48%

Call Type	2018	2019	2020	2021	2022	2023	Total	Total %
Medical/Resuscitator Call	**538**	**492**	**292**	**385**	**453**	**1004**	**3164**	**38.01%**
Accident or illness	48	50	26	27	38	59	248	2.98%
Alcohol or Drug Related	43	60	51	102	100	254	610	7.33%
Asphyxia, respiratory Condition	7	4	9	9	6	13	48	0.58%
Burns	1	3	1	0	0	1	6	0.07%
Chest Pains or Suspected Heart Attack	7	6	1	2	6	11	33	0.40%
CPR administered	7	10	14	12	10	20	73	0.88%
Defibrillator Used	3	1	3	4	2	4	17	0.20%
Electric Shock	0	0	0	0	0	0	0	0.00%
Medical aid not required on arrival	43	37	29	35	32	92	268	3.22%
Medical Resuscitator call false alarm	14	36	15	10	25	45	145	1.74%
Medical Resuscitator call no action required	120	118	55	77	94	229	693	8.32%
Other Medical Resuscitator Call	70	60	20	40	62	75	327	3.93%
Oxygen Administered	22	5	3	9	5	6	50	0.60%
Seizure	100	55	12	7	24	132	330	3.96%
Traumatic Shock	0	2	0	0	1	0	3	0.04%
Vital Signs Absent, DOA	53	45	53	60	48	63	322	3.87%
Other Response	**64**	**57**	**52**	**53**	**79**	**67**	**372**	**4.47%**
Assistance not required by another agency	4	4	1	4	9	3	25	0.30%
Assistance to other agencies	8	7	9	6	13	11	54	0.65%
Assistance to Police	9	13	10	15	16	17	80	0.96%
Assisting other Fire Department (Automatic Aid)	0	0	0	0	0	0	0	0.00%

Call Type	2018	2019	2020	2021	2022	2023	Total	Total %
Other Response (cont'd)							0	0.00%
Assisting other Fire Department (Fire Protection Agreement)	0	0	0	0	0	0	0	0.00%
Assisting other Fire Department (Mutual Aid)	0	0	1	1	0	0	2	0.02%
Assisting other Fire Department (Other)	0	1	0	0	0	1	2	0.02%
Cancelled on Route	11	8	2	6	19	16	62	0.74%
Illegal Grow Operation (no fire)	1	0	0	0	2	0	3	0.04%
Incident Not Found	8	6	5	3	5	4	31	0.37%
Other Public Service	13	10	13	8	10	9	63	0.76%
Other Response	10	8	11	10	5	6	50	0.60%
Overpressure Rupture/explosion (no fire)	**0**	**1**	**2**	**2**	**0**	**0**	**5**	**0.06%**
Overpressure Rupture- Gas pipe (no fire)	0	0	1	0	0	0	1	0.01%
Overpressure Rupture (no fire- steam boilers, hot water)	0	1	1	2	0	0	4	0.05%
Pre-Fire Conditions (no fire)	52	57	53	54	50	69	335	4.02%
Fireworks (no fire)	0	0	4	0	1	10	15	0.18%
Lightning (no fire)	0	0	0	0	1	0	1	0.01%
Other (cooking, toasting, smoke, steam)	21	16	10	11	20	18	96	1.15%
Other pre fire conditions (no fire)	**11**	**18**	**21**	**17**	**12**	**15**	**94**	**1.13%**
Overheat (no fire- mechanical devices)	13	14	8	13	11	16	75	0.90%
Pot on Stove	7	9	10	13	5	10	54	0.65%
Public Hazard	**64**	**67**	**78**	**73**	**77**	**58**	**417**	**5.01%**
Bomb, Explosive removal Standby	0	0	0	3	1	0	4	0.05%

Call Type	2018	2019	2020	2021	2022	2023	Total	Total %
CO incident, CO present	10	5	11	7	16	5	54	0.65%
Gas Leak - Miscellaneous	3	2	1	2	2	2	12	0.14%
Gas Leak - Natural Gas	14	22	16	21	15	20	108	1.30%
Gas Leak - Propane	0	5	2	1	5	1	14	0.17%
Gas Leak - Refrigeration	0	1	0	2	0	0	3	0.04%
Other Public Hazard	5	3	8	1	11	4	32	0.38%
Power Lines Down, Arcing	10	12	13	12	8	7	62	0.74%
Public Hazard call false alarm	3	6	14	10	5	9	47	0.56%
Public Hazard no action required	5	4	3	8	1	5	26	0.31%
Ruptured Water, Steam Pipe	3	1	1	2	4	0	11	0.13%
Spill- Gasoline or Fuel	5	4	7	2	5	5	28	0.34%
Spill - Miscellaneous	3	1	2	2	3	0	11	0.13%
Spill - Toxic Chemical	0	1	0	0	0	0	1	0.01%
Suspicious Substance	3	0	0	0	1	0	4	0.05%
Rescue	**232**	**332**	**244**	**224**	**295**	**283**	**1610**	**19.34%**
Animal Rescue	0	0	1	0	0	1	2	0.02%
Building Collapse	0	0	0	0	0	0	0	0.00%
Commercial Industrial Accident	2	1	1	1	0	0	5	0.06%
Confined Space Rescue (non-fire)	0	0	2	0	0	0	2	0.02%
High Angle Rescue	0	0	0	1	0	0	1	0.01%
Home/Residential Accident	0	0	2	1	3	2	8	0.10%
Low Angle Rescue	0	0	0	0	0	0	0	0.00%

Call Type	2018	2019	2020	2021	2022	2023	Total	Total %
Other Rescue	6	5	6	3	5	9	34	0.41%
Persons Trapped in Elevator	6	9	5	5	9	13	47	0.56%
Rescue False Alarm	1	1	0	1	2	1	6	0.07%
Rescue No Action Required	2	3	6	2	3	3	19	0.23%
Vehicle Collision	204	306	212	200	259	249	1430	17.18%
Vehicle Extrication	11	5	8	10	13	5	52	0.62%
Water Ice Rescue	0	1	1	0	0	0	2	0.02%
Water Rescue	0	1	0	0	1	0	2	0.02%
Total	**1370**	**1383**	**1130**	**1129**	**1378**	**1935**	**8325**	**100.00%**

Table Source: OFM SIR data for City of Woodstock[24] and 2023 Data from the City of Woodstock Fire

[24] *Ibid*

10.3 Past Loss & Event History Profile – Identified Risks and Key Findings

Table 57: Past Loss & Event History Profile – Identified Risks and Key Findings

Identified Risk / Key Finding	Rationale
Identified Risk	Industrial occupancies, represent 11.29% of structure fires and 8.92% of total structure fire loss during this period, with a 3.99% higher incident rate than the province for this occupancy type.
Identified Risk	67.74% (84) fires occurred in Group C-Residential Occupancies, contributing to 71.68% of the total fire loss
Identified Risk	Open flame tools/ smoker's articles represent the highest number of reported ignition source (37 fires) representing 29.84 % of all fire causes. This is more than double the provincial average (13.73%).
Identified Risk	Over a five-year period from January 1st, 2019, to December 31st, 2023, in Group C - Residential occupancies, the City of Woodstock reported that in 39.29% of fires responded to, there was no smoke alarm present, or a smoke alarm was present and did not operate. This is higher than the provincial average of 29.57%.
Identified Risk	In the City 34.52% of incidents smoke alarms were present and successfully operated, which is 10.00% lower than the provincial rate of 44.52%.
Key Finding	The City of Woodstock had a 1.98 higher rate of fires in Group A assembly occupancies and an 8.21% higher fire loss than that of the province.
Key Finding	The city reported 13 arson fires (3.83% higher than the Province) and 7 fires related directly to vandalism (4.06% higher than the province)
Key Finding	Incidents in the city where the ignition source was "other electrical/mechanical" is 4.95% higher than that of the province.
Key Finding	Vehicle Collisions are 88.81% of all rescue incidents.

SECTION 11
IDENTIFIED RISKS AND RISK TREATMENTS

The purpose of a CRA is to identify risks that are then used to inform decision-making regarding the provision of fire protection services. The analysis throughout this CRA identifies 'Key Findings' and 'Identified Risks' to be considered. In alignment with **TG-02-2019**, this section takes the identified risk conclusions (both the key findings and the identified risks) through a risk assignment process to assist in the prioritization of risks, as well as a risk treatment process. This section of the CRA brings together all the key findings and identified risks. They are taken through a risk treatment process and aligned with the "Five E's" of Community Risk Reduction and three lines of defence to inform the analysis and recommendations for within a Fire Master Plan or other strategic document as shown in Figure 14.

Figure 14: Risk Conclusions Application Process

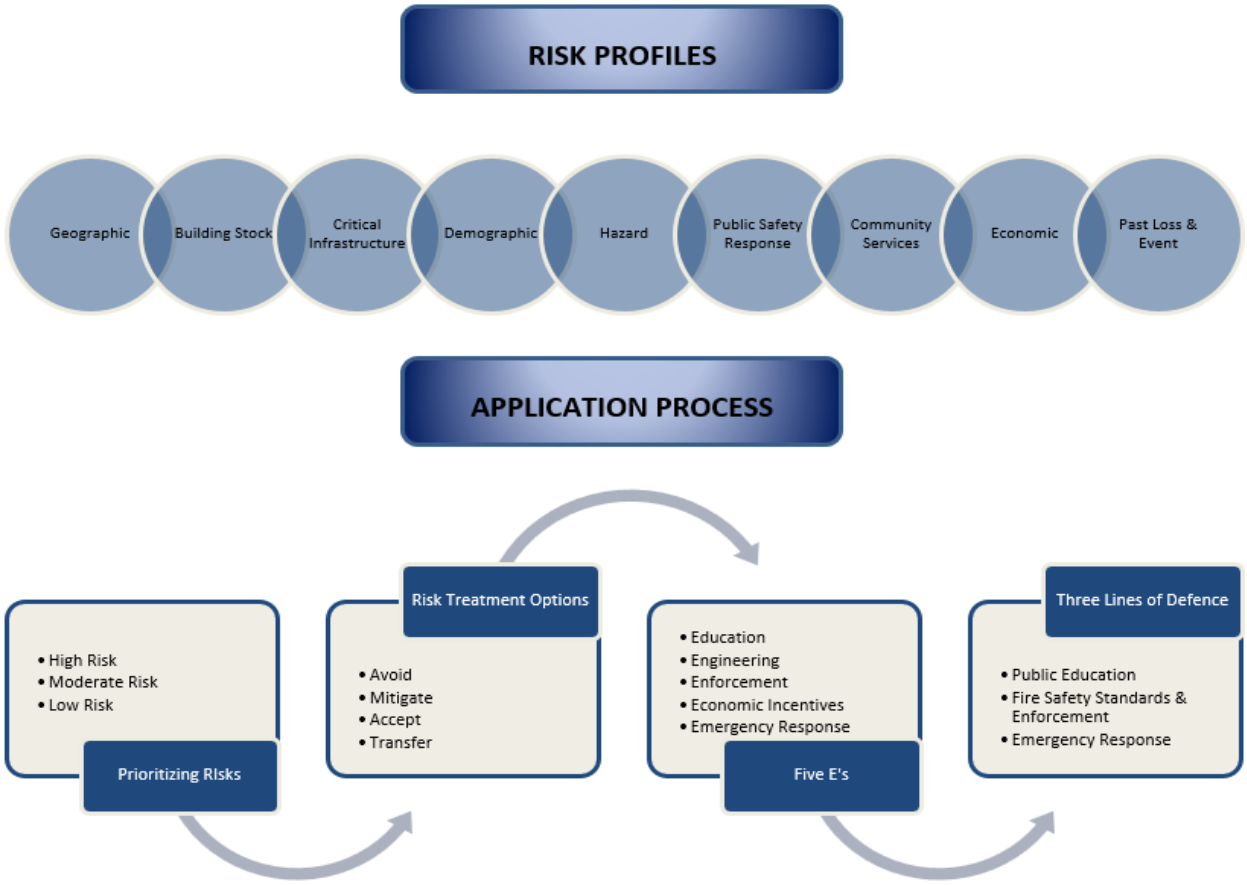


Figure Source: Adapted from OFM TG-02-2019 & NFPA 1300[25]

[25] *Office of the Fire Marshal, Community Risk Assessment Technical Guideline TG 02-2019, Section 6, Pg 16 & NFPA 1300, 2020 Edition, Annex A.6.3.3.2(4)*

11.1 Prioritizing Risk

Following the probability and consequence levels identified by the OFM as described in the subsections below, the risk assignment process considers the probability and consequence of each identified risk. This will result in each risk having a risk level (e.g., low, moderate, or high) assigned. These risk levels will then be used to assist in the prioritization of risks as part of a Fire Master Plan.

11.1.1 Risk assignment Process Overview

The risk assignment methodology used as part of this CRA is informed by the OFM Technical Guideline (TG)-02-2019 Community Risk Assessment Guideline. There are three steps included in the risk assignment exercise used for this CRA.:

1. **Determine a probability level:** The probability of a fire or emergency event occurring can be estimated in part based on historical experience of the community and that of the province. The likelihood categories, and the values presented, follow the OFM TG-02-2019 Community Risk Assessment Guideline. Table 58 presents the probability levels and the adjusted descriptions.

Table 58: Probability Level

Likelihood Category	Numerical Value[26]	Description
Rare	1	• May occur in exceptional circumstances • No incidents in the past 15 years
Unlikely	10	• Could occur at some time, especially if circumstances change • 5 to 15 years since last incident
Possible	100	• Might occur under certain circumstances • 1 incident in the past 5 years
Likely	1,000	• Will probably occur at some time under current circumstances • Multiple or recurring incidents in the past 5 years
Almost Certain	10,000	• Expected to occur unless circumstances change • Multiple or recurring incidents in the past year

Table Source: OFM TG 02-2019[27]

[26] *Numeric scales are taken from Dillon Consulting, The Corporation of the city of Mississauga Community Risk Identification: Introduction and Methodology, July 2017*

[27] *Office of the Fire Marshal, Community Risk Assessment Technical Guideline TG 02-2019, Section 4.1, Pg 13*

2. **Determine a consequence level:** The consequences of an emergency event relate to the potential losses or negative outcomes associated with the incident. There are four components that should be evaluated in terms of assessing consequence. These include:
   a) **Life Safety:** Injuries or loss of life due to occupant and firefighter exposure to life threatening fire or other situations.
   b) **Property Loss:** Monetary losses relating to private and public buildings, property content, irreplaceable assets, significant historic/symbolic landmarks, and critical infrastructure due to fire.
   c) **Economic Impact:** Monetary losses associated with property income, business closures, downturn in tourism, tax assessment value and employment layoffs due to fire.
   d) **Environmental Impact:** Harm to human and non-human (e.g., wildlife, fish, and vegetation) species of life and general decline in quality of life within the community due to air/water/soil contamination because of fire or fire suppression activities. Table 59 presents the consequence levels.

Table 59: Consequence Levels

Likelihood Category	Numerical Value[28]	Description
Insignificant	1	• No life safety issue • Limited value or no property loss • No impact to local economy • No effect of general living conditions
Minor	10	• Potential risk to life safety of occupants • Minor property loss • Minimal disruption to business activity and/or Minimal impact on general living conditions
Moderate	100	• Threat to life safety of occupants • Moderate property loss • Poses threat to small local businesses • Could pose threat to quality of the environment
Major	1,000	• Potential for large loss of life • Would result in significant property damage • Significant threat to businesses, local economy, and tourism • Impact to environment would result in a short term, partial evacuation of local residents and businesses
Catastrophic	10,000	• Significant loss of life • Multiple property damage to a sizable portion of the city • Long term disruption of businesses, local employment, and tourism and/or Environmental damage that would result in long-term evacuation of local residents and businesses

Table Source: OFM TG 02-2019[29]

[28] *Numeric scales are taken from Dillon Consulting, The Corporation of the city of Mississauga Community Risk Identification: Introduction and Methodology, July 2017*

[29] *Office of the Fire Marshal, Community Risk Assessment Technical Guideline TG 02-2019, Section 4.2 pg. 14*

3. **Establish the risk level:** (i.e., low, moderate, or high) for each risk based on the identified probability and consequence for each event. Once probability and consequence are determined the level of risk is calculated by multiplying the numerical values[30] for probability and consequence. The relationship between probability and consequence as it pertains to risk levels can be illustrated in a risk matrix. In a risk matrix, probability and consequence are defined on separate scales with varying descriptors providing directions on how to assign the probability and consequence of an event. Table 60 shows the risk matrix for this CRA.

Table 60: Probability & Consequence Risk Matrix

Probability/ Consequence	Insignificant 1	Minor 10	Moderate 100	Major 1,000	Catastrophic 10,000
Almost Certain 10,000	Moderate	Moderate	High	High	High
Likely 1,000	Moderate	Moderate	Moderate	High	High
Possible 100	Low	Moderate	Moderate	Moderate	High
Unlikely 10	Low	Low	Moderate	Moderate	Moderate
Rare 1	Low	Low	Low	Moderate	Moderate

Table Source: OFM TG 02-2019[31]

11.1.2 Assigned Risk Levels

The purpose of assigning a risk level is to assist in the prioritization of the range of risks that were identified as part of this CRA. The results of the risk assignment process are presented in Table 61. Where possible, quantitative data was used to inform the risk assignment as described in the rationale in the table.

[30] *Numeric scales are taken from Dillon Consulting, The Corporation of the city of Mississauga Community Risk Identification: Introduction and Methodology, July 2017*

[31] *Office of the Fire Marshal, Community Risk Assessment Technical Guideline TG 02-2019, Appendix B Pg B1*

Table 61: Risk Assignment

Profile	Identified Risk	Probability Level	Rationale	Consequence Level	Rationale	Risk Level
Geographic	The road network, particularly highways 401 and 403 which crosses the southern portion of the city contributes to emergency call volume due to motor vehicle collisions and vehicle fires.	Almost Certain	Approximately 1430 emergency calls responded to between 2018 and 2023 pertain to motor-vehicle related incidents, this represents 88.81% of rescue calls and approximately 17.10% of all calls responded to by WFD during that period.	Moderate	• Potential for risk to life safety of occupants of motor vehicles • Potential risk for property loss • Could pose a threat to small local business • Could pose a threat to the quality of the environment • Consequence level could be impacted by the magnitude of a hazard event	High

Geographic	Since provincial highways and rail lines are designated dangerous goods routes, traffic carrying various hazardous materials regularly passes through the City. Both are major transportation corridors used to transport goods across the county and across borders into the U.S.	Possible	Provincial Highways 401and 403 intersect in Woodstock. Hwy 401 bisects the city in an east-west direction. Highways 401 and 403 crosses the southern portion of the city. Both are major transportation corridors used to transport goods across the county and across borders into the U.S. Incidents involving roads and highways, as well as incidents involving dangerous goods, were listed as a moderate threat on the city's 2022 Hazard Identification and Risk Assessment Dangerous goods are frequently transported along these routes, which pass through populated areas.	Major	• Significant loss of life • Multiple property damage to sizable portion of the city • Long term disruption of farms, businesses, local employment, and tourism and/or Environmental damage that would result in evacuation of local residents, farms, and businesses	Moderate

Geographic Profile	Large areas of agricultural land and green spaces throughout the city face an increased risk of grass, field, and wooded area fires, particularly during droughts and dry conditions typically experienced in the summer months.	Possible	The City of Woodstock has agricultural lands and some forestry features which present an element of risk related to wildland and grass fires. In January 2018, the City of Woodstock (the City), acquired lands from the neighbouring Township of Norwich with the intention of expanding the settlement boundary to accommodate future industrial and commercial development. These lands included 607 hectares of land in two separate areas located at the southeast and southwest corners of the City's municipal boundary. They currently accommodate uses such as rural land, crops, farm related residential, livestock, industrial, commercial and utilities.	Moderate	• Potential for risk to life safety of occupants of motor vehicles • Potential risk for property loss • Could pose a threat to small local business • Could pose a threat to the quality of the environment • Consequence level could be impacted by the magnitude of a hazard event	Moderate

Building Stock and Past Loss and Event History	Group C residential occupancies represent 94.79% of the city's existing occupancies. Standard Incident Reporting (SIR) from the OFM indicates 71.68% of structure fire loss and 100% of the fatalities over the five-year period from January 1, 2019, to December 31, 2023, occurred within Group C - Residential Occupancies.	Almost Certain	• The majority of the city's existing property stock is comprised of Group C - Residential Occupancies (94.79%) • 71.68% of structure fires loss over the five-year period from January 1, 2019, to December 31, 2023, occurred within Group C - Residential Occupancies. • 100.00% of the civilian fire related fatalities occurred in Group C Occupancies. • Over a five-year period from January 1st, 2019, to December 31st, 2023, in Group C - Residential occupancies, the City of Woodstock reported that in 39.29% of fires responded to, there was no smoke alarm present, or a smoke alarm was present and	Moderate	• Could pose a threat to the life safety of occupants • Could result in moderate property loss • Could pose a threat to small local businesses, and/or pose a threat to the quality of the environment • Potential for vulnerable individuals including seniors and youth within Group C • Potential for exposure risk depending on dwelling type and building age	High

			did not operate. This is higher than the provincial average of 29.57%. • In the City 34.52% of incidents smoke alarms were present and successfully operated, which is 10.00% lower than the provincial rate of 44.52%.			
Building Stock	Information from MPAC data indicates that approximately 45.54% (8215 properties) of the city's building stock was constructed before 1981, prior to the adoption of the 1981 Ontario Fire Code (OFC).	Almost Certain	7,313 (40.54%) dwellings were built prior to 1975 and the adoption of the Ontario Building code and the requirement to meet safe building standards. 45.54% of the city's building stock was built before 1981, preceding the adoption of the 1981 OFC	Moderate	• Could pose a threat to the life safety of occupants • Could result in moderate property loss • Could pose a threat to small local businesses, and/or pose a threat to the quality of the environment • Occupants could be vulnerable individuals including seniors and youth within Group C – Residential	High

Building Stock & Past Loss & Event History	19 properties in Woodstock have been identified as having a potentially high fuel load, leading to an increased fire risk	Likely	There are 372 industrial occupancies (2.26% of property stock) - several with known high fuel load concerns There have been 14 industrial fires over the past 5 years (11.29% of all fires) resulting in over $750k fire loss	Major	• Significant threat to businesses, local economy, and tourism • Impact to environment could result in a short term, partial evacuation of local residents and businesses • Prolonged disruptions to supply chains • Will require increases to Effective Response force numbers for fire suppression operations	High
Building Stock	The City of Woodstock has 10 occupancies with a footprint of more than 100,000 sq. ft.	Possible	There are 372 industrial occupancies (2.26% of property stock) - several with known high fuel load concerns There have been 14 industrial fires over the past 5 years (11.29% of all fires) resulting in over $750k fire loss	Major	• Significant threat to businesses, local economy, and tourism • Impact to environment could result in a short term, partial evacuation of local residents and businesses • Prolonged disruptions to supply chains • Will require increases to Effective Response force numbers for fire suppression operations	Moderate
Demographic	The percentage of the population aged 65 years	Almost Certain	Canada's aging population has been recognized as	Moderate	• Could pose a threat to the life safety of occupants	High

	and older in Woodstock represents 19.57% of the total population, which is higher than the province's rate of 18.55%. Additionally, 13.31% of the city's population falls between the ages of 55 and 64, gradually aging into the senior demographic of 65 years and older.		one of the most significant demographic trends. Seniors (those 65 years and over) are considered to represent one of the highest fire risk groups across the province based on residential fire death rate (fire deaths per million of population). There are 8 long-term care/retirement homes		• Could result in moderate property loss • Potential for exposure risk depending on dwelling type and building age • Potential presence and maintenance of fire protection equipment would influence consequence level	
Past Loss and Event History	Industrial occupancies, represent 11.29% of structure fires and 8.92% of total structure fire loss during this period, with a 3.99% higher incident rate than the province for this occupancy type.	Likely	Group F industrial accounts for only 2.26% of the property stock but 11.29 % of the structure fires. The City of Woodstock had a 3.99% higher incidence of industrial fires than the province. There are 372 industrial occupancies (2.26% of property stock) - several with known high fuel load concerns There have been 14 industrial fires over the past 5 years (resulting in over $750k fire loss)	Major	• Potential presence and maintenance of fire protection equipment would influence consequence level • potential for large loss of life, significant property damage, significant threat to businesses and local economy – depending on type of business	High

Past Loss and Event History	67.74% (84) fires occurred in Group C-Residential Occupancies, contributing to 71.68% of the total fire loss	Almost Certain	City of Woodstock reported that in 39.29% of fires responded to, there was no smoke alarm present, or a smoke alarm was present and did not operate. This is higher than the provincial average of 29.57%. (37 fires) representing 28.94% of all fire causes was smoking related materials. This is more than double the provincial average at 13.73% 34.52% of incidents smoke alarms were present and successfully operated, which is 10.00% lower than the provincial rate of 44.52%.	Moderate	• Could pose a threat to the life safety of occupants • Could result in moderate property loss • Potential for exposure risk depending on dwelling type and building age • Potential presence and maintenance of fire protection equipment would influence consequence level	High

Past Loss and Event History	Open flame tools/ smoker's articles represent the highest number of reported ignition source (37 fires) representing 29.84 % of all fire causes. This is more than double the provincial average (13.73%).	Likely	The majority of the city's existing property stock is comprised of Group C - Residential Occupancies (94.79%) 71.68% of structure fires loss over the five-year period from January 1, 2019, to December 31, 2023, occurred within Group C - Residential Occupancies. 100.00% of the civilian fire related fatalities occurred in Group C Occupancies.	Moderate	• Could pose a threat to the life safety of occupants • Could result in moderate property loss • Potential for exposure risk depending on dwelling type and building age • Potential presence and maintenance of fire protection equipment would influence consequence level	Moderate
Past Loss and Event History	Over a five-year period from January 1st, 2019, to December 31st, 2023, in Group C - Residential occupancies, the City of Woodstock reported that in 39.29% of fires responded to, there was no smoke alarm present, or a smoke alarm was present and did not operate. This is higher than the provincial average of 29.57%.	Likely	The majority of the city's existing property stock is comprised of Group C - Residential Occupancies (94.79%) 71.68% of structure fires loss over the five-year period from January 1, 2019, to December 31, 2023, occurred within Group C - Residential Occupancies.	Moderate	• Could pose a threat to the life safety of occupants • Could result in moderate property loss • Potential for exposure risk depending on dwelling type and building age • Potential presence and maintenance of fire protection equipment would influence consequence level	Moderate

			100.00% of the civilian fire related fatalities occurred in Group C Occupancies.			
Past Loss and Event History	In the City 34.52% of incidents smoke alarms were present and successfully operated, which is 10.00% lower than the provincial rate of 44.52%.	Likely	The majority of the city's existing property stock is comprised of Group C - Residential Occupancies (94.79%) 71.68% of structure fires loss over the five-year period from January 1, 2019, to December 31, 2023, occurred within Group C - Residential Occupancies. 100.00% of the civilian fire related fatalities occurred in Group C Occupancies.	Moderate	• Could pose a threat to the life safety of occupants • Could result in moderate property loss • Potential for exposure risk depending on dwelling type and building age • Potential presence and maintenance of fire protection equipment would influence consequence level	Moderate

11.2 Risk Treatment

NFPA 1300 and the OFM TG-02-2019 apply the process of identifying a risk treatment option for an identified risk. The risk treatment options include avoidance, mitigation, acceptance, and transfer.

Table 62: Risk Treatment Options

Treatment Option	Description
Avoid	Implementing programs and initiatives to prevent a fire or emergency from happening.
Mitigate	Implementing programs and initiatives to reduce the probability and/or consequence of a fire or emergency.
Accept	After identifying and prioritizing a risk, the fire service determines that no specific programs or initiatives will be implemented to address this risk.
Transfer	The fire service transfers the impact and/or management of the risk to another organization or body. (i.e. fire protection agreements, automatic aid)

Table Source: OFM TG 02-2019[32]

Section 7 of TG 02-2019 discusses setting the levels of service. To assist with application of the Identified Risks in the CRA, municipalities must consider the "Establishment of goals and objectives, strategies, timelines, and evaluation for the proposed fire protection services to be provided."[33] This includes the identification of programming or resource gaps and the plan to close those gaps. Typically, this articulated as part of a Fire Master Plan or Community Risk Reduction strategy.

Recommendations of a Fire Master Plan should focus on ways to proactively reduce risk through education, prevention, and enforcement with fire suppression as the fail-safe.

The Five Es is a framework outlined in NFPA 1300, and the Institution of Fire Engineers' Vision 20/20 National Strategy for Fire Loss Prevention, is a tool that helps to provide a lens through which identified risks can be reviewed to inform and support the Fire Master Plan. Table 63 identifies and describes each of the 5 Es of risk mitigation.

[32] *Office of the Fire Marshal, Community Risk Assessment Technical Guideline TG 02-2019, Section 6 pg. 16*

[33] *Office of the Fire Marshal, Community Risk Assessment Technical Guideline TG 02-2019, 7 pg. 18*

Table 63: 5 Es of Risk Mitigation

Mitigation Type	Description
Education	Aims to provide information that creates awareness and knowledge and subsequently changes behaviour.
Enforcement	Intended to correct negative human behaviour through legislation such as the Ontario Building Code and the Ontario Fire Code and the Provincial Offences Act.
Engineering	When education does not change an individual's behavior, this component removes the human factor and introduces technology to improve safety such as smoke alarms.
Economic Incentives	Provided to reinforce positive impacts (e.g., insurance discounts or tax levy reductions) and discourage negative impacts (e.g., fines and charges)
Emergency Response	Necessary only if the first 4 Es are unsuccessful, and a fire incident occurs. The level of service for a community is determined by Council based on the needs and circumstances identified locally.

Source: Adapted from NFPA 1300 & Vision 20/20[34]

Table 64 summarizes the identified risks and presents ways in which the risks can be addressed by WFD and ultimately considered within the Fire Master Plan analysis and recommendations.

[34] *NFPA 1300, 2020 Edition, Annex A.6.3.3.2(4)*

Table 64: Identified Risk Treatment

Profile	Identified Risk	Risk Level	Risk Treatment Option	Education	Enforcement	Engineering	Economic Incentives	Emergency Response
Geographic	The road network, particularly highways 401 and 403 which crosses the southern portion of the city contributes to emergency call volume due to motor vehicle collisions and vehicle fires.	High	Accept	No	No	No	No	Yes
Geographic	Since provincial highways and rail lines are designated dangerous goods routes, traffic carrying various hazardous materials regularly passes through the City. Both are major transportation corridors used to transport goods across the county and across borders into the U.S.	Moderate	Accept	No	No	No	No	Yes

Profile	Identified Risk	Risk Level	Risk Treatment Option	Education	Enforcement	Engineering	Economic Incentives	Emergency Response
Geographic Profile	Large areas of agricultural land and green spaces throughout the city face an increased risk of grass, field, and wooded area fires, particularly during droughts and dry conditions typically experienced in the summer months.	Moderate	Accept	No	No	No	No	Yes
Building Stock and Past Loss & Event History	Group C residential occupancies represent 94.79% of the city's existing occupancies. Standard Incident Reporting (SIR) from the OFM indicates 71.68% of structure fire loss and 100% of the fatalities over the five-year period from January 1, 2019, to December 31, 2023, occurred within Group C - Residential Occupancies.	High	Mitigate	Yes	Yes	Yes	No	Yes

Profile	Identified Risk	Risk Level	Risk Treatment Option	Education	Enforcement	Engineering	Economic Incentives	Emergency Response
Building Stock	Information from MPAC data indicates that approximately 45.54% (8215 properties) of the city's building stock was constructed before 1981, prior to the adoption of the 1981 Ontario Fire Code (OFC).	High	Mitigate	Yes	Yes	Yes	No	Yes
Building Stock	19 properties in Woodstock have been identified as having a potentially high fuel load, leading to an increased fire risk	High	Mitigate	Yes	Yes	Yes	Yes	Yes
Building Stock	The City of Woodstock has 10 occupancies with a footprint of more than 100,000 sq ft.	Moderate	Mitigate	Yes	Yes	Yes	Yes	Yes

Profile	Identified Risk	Risk Level	Risk Treatment Option	Education	Enforcement	Engineering	Economic Incentives	Emergency Response
Demographic	The percentage of the population aged 65 years and older in Woodstock represents 19.57% of the total population, which is higher than the province's rate of 18.55%. Additionally, 13.31% of the city's population falls between the ages of 55 and 64, gradually aging into the senior demographic of 65 years and older.	High	Mitigate	Yes	Yes	Yes	No	Yes
Past Loss & Event History	Industrial occupancies, represent 11.29% of structure fires and 8.92% of total structure fire loss during this period, with a 3.99% higher incident rate than the province for this occupancy type.	High	Mitigate	Yes	Yes	Yes	Yes	Yes
Past Loss & Event History	67.74% (84) fires occurred in Group C-Residential Occupancies, contributing to 71.68% of the total fire loss	High	Mitigate	Yes	Yes	Yes	No	Yes

Profile	Identified Risk	Risk Level	Risk Treatment Option	Education	Enforcement	Engineering	Economic Incentives	Emergency Response
Past Loss & Event History	Open flame tools/ smoker's articles represent the highest number of reported ignition source (37 fires) representing 29.84 % of all fire causes. This is more than double the provincial average (13.73%).	Moderate	Mitigate	Yes	Yes	Yes	No	Yes
Past Loss & Event History	Over a five-year period from January 1st, 2019, to December 31st, 2023, in Group C - Residential occupancies, the City of Woodstock reported that in 39.29% of fires responded to, there was no smoke alarm present, or a smoke alarm was present and did not operate. This is higher than the provincial average of 29.57%.	Moderate	Mitigate	Yes	Yes	Yes	Yes	Yes

Profile	Identified Risk	Risk Level	Risk Treatment Option	Education	Enforcement	Engineering	Economic Incentives	Emergency Response
Past Loss & Event History	In the City 34.52% of incidents smoke alarms were present and successfully operated, which is 10.00% lower than the provincial rate of 44.52%.	Moderate	Mitigate	Yes	Yes	Yes	Yes	Yes

APPENDICES

Appendix A: List of Figures, Maps, and Tables

Figures

Maps

Tables

Appendix B: Reference

Ontario Regulation 378/18: Community Risk Assessments, Mandatory Use, Section 1 (b)

Ontario Regulation 378/18, Community Risk Assessments, Mandatory Use, Section 1(b)

Fire Protection and Prevention Act, 1997 Part II Responsibility for Fire Protection Services, Section 2.1 (a) (b)

Fire Protection and Prevention Act, 1997, Part III Fire Marshal, Section 9.2 (b)

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(Ontario Ministry of Municipal Affairs and Housing, 2017)

Office of the Fire Marshal and Emergency Management. (2017, May). Operational Planning: An Official Guide to Matching Resource Deployment and Risk Workbook.

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Municipal Property Assessment Corporation (MPAC) 2024

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Statistics Canada. (Updated 2016). Income Decile Group. Retrieved from Statistics Canada Website

OFM SIR Data for the City of Woodstock, 2019-2023

OFM SIR Data for the City of Woodstock, 2019-2023

(SIR - Municipal Fires Overview 2018-2022, 2024)

OFM SIR Data, 2018-2022

Office of the Fire Marshal, Community Risk Assessment Technical Guideline TG 02-2019, Section 6, Pg 16 & NFPA 1300, 2020 Edition, Annex A.6.3.3.2(4)

Numeric scales are taken from Dillon Consulting, The Corporation of the city of Mississauga Community Risk Identification: Introduction and Methodology, July 2017

Office of the Fire Marshal, Community Risk Assessment Technical Guideline TG 02-2019, Section 4.1, Pg 13

Numeric scales are taken from Dillon Consulting, The Corporation of the city of Mississauga Community Risk Identification: Introduction and Methodology, July 2017

Office of the Fire Marshal, Community Risk Assessment Technical Guideline TG 02-2019, Section 4.2 pg. 14

Numeric scales are taken from Dillon Consulting, The Corporation of the city of Mississauga Community Risk Identification: Introduction and Methodology, July 2017

Office of the Fire Marshal, Community Risk Assessment Technical Guideline TG 02-2019, Appendix B Pg B1

Office of the Fire Marshal, Community Risk Assessment Technical Guideline TG 02-2019, Section 6 pg. 16

Office of the Fire Marshal, Community Risk Assessment Technical Guideline TG 02-2019, 7 pg. 18

NFPA 1300, 2020 Edition, Annex A.6.3.3.2(4)